

Developing a progressive chunking technique in music literacy:
An analysis of the method books and sight-reading materials for beginner piano
students

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Abstract

Chunking is a cognitive process that re-organizes information into groupings, promoting efficient memory storage and recall. Due to the complexity of music scores, music reading requires both knowledge of the individual notes and recognition of musical chunks for rapid and accurate reading. For young piano students, it is especially important to systematically introduce and develop connections between individual notes and chunks. However, despite the importance of chunking, few studies have examined the development of chunking techniques in music reading for younger students. The objective of this thesis is to investigate how beginner piano method book and sight-reading book series for young students address chunking and provide a guide to develop chunking techniques that influence both reading and playing the piano. This study analyzes the contents of ten method book series and seven sight reading book series, examining the types and sizes of patterns introduced within the series, and the frequency of reinforcement. The study also examines pattern-related instructions, concepts and visual cues included in the series. The results reveal a lack of systemic chunking technique development, the importance of pattern recognition and the need for incorporating written instructions and visual cues to encourage chunking. Although the present study affirms the lack of development on chunking techniques in the evaluated teaching materials, the findings demonstrate the areas that could be developed to form chunking processes. Based on this research, suggestions are made to improve teaching materials to include chunking techniques and processes.

Key words: Music reading, Chunking, Patterns, Visual presentation, Sight-reading, Beginner Piano Method books, Young piano students

I. Introduction

Study background

Music can be taught through listening and rote playing, however, reading music is a fundamental ability to understand music scores. Like a manual, a music score instructs how a particular piece of music should be played. Hence, the capability of reading a music score cultivates greater opportunities to teach and learn music from different eras, genres, and composers, and is an essential skill in learning music. However, due to its complexity and diversity, reading music is a challenge for those who want to learn music and play musical instruments.

Reading music is often compared with language reading acquisition due to structural similarities. For example, language reading is taught in two ways, “bottom-up” (phonetic) and “top-down” (lexical), which can also be applied to reading music. In the “bottom-up” approach, first the phonetic structure of the language is built, developing the recognition of individual letters and their associated sounds. Traditionally, music reading instruction begins with the recognition of individual notes (e.g., *Modern Course of the piano* by J. Thompson, 1937; *John W. Schaum Piano Course*, 1945; *David Carr Glover Piano Library*, 1967; *The A. B. C. of Piano playing* by B. Berlin, 1983) and small intervals (e.g., *The Music Tree* by F. Clark, L. Gross, and S. Halland, 1955). Individual notes are analogous to letters in the alphabet, and learning notes is equivalent to building a phonetic foundation. Therefore, the traditional method of teaching music notation is comparable to the “bottom-up” approach in language development. The “top-down” approach utilizes a recall process, whereby previously introduced words, which have been stored in the memory, are recognized. In the “top-down” process, chunking plays an important role in storage and retrieval within the working memory by grouping small units (i.e., individual letters)

within a larger pattern (i.e., words) to its associated meaning (Gobet et al., 2001). The recognition of musical chunks and patterns is similar to the process of recognizing words. Therefore, teaching chunking techniques in music provides a tool to build a musical dictionary and assist in music reading, building upon the traditional method of teaching individual notes.

In general, chunking is an important learning and cognitive process, which facilitates many areas of skill development. Chunking theory and chunking mechanisms were initially developed upon examining how expert chess players remembered chess positions quickly and accurately in order to make decisions for their next moves (Chase & Simon, 1973; Gobet & Simon, 1996; Saariluoma & Laine, 2001). Chunking expands the limits of working memory capacities to process more information (Nassar et al., 2018; Thalmann et al., 2019). Several fields utilize chunking to expand working memory. For example, while solving geometry problems in mathematics, students perform better when they utilize visual chunking to represent the problem, guiding them to the solution (Zhang et al., 2012). Science and engineering have great demands on working memory capacity, and chunking visual information has been shown to promote students' working memory (Stieff et al., 2020). In addition, tasks that require certain motor skills and repetitive movements are often trained through sequence practice, another form of chunking. When movements are grouped as a series of chunks, reaction time and errors are reduced. For example, dancers group their movements by musical cue, whereby the cue becomes a trigger for movement recall (Bar & DeSouza, 2016). Since chunking is closely connected with working memory, storing and recall are essential elements of the process. When a chunk is associated with a meaning and the meaning is frequently reminded with a trigger, such as a visual or aural cue, the storing and recall process can be strengthened. Therefore, chunking techniques can be

taught and practiced by frequent exposure and connection to a cue, like effective visual presentation.

Chunking and Children

Music is often taught to young students whether it is from school or a private lesson, and chunking is a critical process in music reading. Therefore, it is important to explore the studies about the relationship between age and chunking to understand the scope of chunks that children could manage and the development of their working memory capacity. Biologically, chunking ability evolves with age as neurological systems develop. While individual children develop at different rates, and children with certain developmental disorders, including autism spectrum disorder or developmental language disorder, exhibit difficulties with the chunking process (Li et al. 2021; Montgomery et al. 2018), chunking ability has been detected as young as seven months of age (Moher et al. 2012). Chunking ability improves as working memory capacity (WMC) develops, and WMC increases with age (Cowan et al. 2015; Mathy et al. 2016; Reynold et al. 2022). In addition, chunking skills develop with environmental input. Frequent exposure to external stimulation and different experiences expands a child's chunking ability. For example, when children process certain Chinese characters, most older children tend to make less mistakes in copying the characters than younger children because the older children have more experiences and exposures to the different Chinese characters and develop their visual chunking skills over the years (Pak et al., 2005). Since visual chunking skills are developed by frequent exposures and experiences on the visual cues, the children who were exposed to a certain visual information, like Chinese characters, at a younger age would have more opportunity to experience the information and build chunking mechanisms than those who had less experience

due to late and shorter duration of exposures. As a result, early training in chunking could increase children's chunking capacities and aid in outperforming children with early experience and exposure (Jones, 2012).

Appropriate training approaches and instruction accelerate children's chunking ability. Presenting definitions of different chunks and providing visual cues to indicate chunks facilitate the chunking process for both younger and older children. In language reading acquisition, studies have shown that chunkable information (i.e., actual words or sentences) was recalled more accurately than non-chunkable information by children regardless of reading skill (Caltagirone et al. 1985). Cowan and his colleagues (2015) demonstrated that the provision of context (visual cues) improved the performance of children in grades one through four by testing their working memory with changing locations of various probes. Mathy et al. (2016) evaluated the WMC of children, aged six to ten years old, when chunkable and non-chunkable information were presented using a memory game task. From the data of 372 children, the study demonstrated that age was an important element in determining the size of chunks that children were capable of processing. Despite different abilities in chunking, both younger and older children performed better when the information was chunkable. Therefore, it is critical to present information which can be chunked, provide cues for chunking, and consider the size of the chunks based on the age of the student.

Chunking development and subsequent increase of the WMC are associated with the size of the chunk instead of the number of chunks. Therefore, when teaching children, it is important to customize the size of the chunks to the child's age. In a study performed by Smalle et al. (2015), the authors examined chunk size differences between children and adults using Hebb repetition learning (HRL), whereby study participants were repeatedly presented with a series of

French nouns. The authors found that information presented in smaller chunks were more effective in developing chunking abilities for both children and adults, although adults were capable of processing larger chunks. Similarly, while investigating linguistic fluency in adults and children using different chunking frequency conditions - word frequency, phrase frequency, and phonetic complexity, Quinn (2021) found that word frequency was better for improving lexical processes in both adults and children while phrase frequency aided adults in upgrading their phonological/motor chunking but had no effect on children. Therefore, children's chunking ability can be improved with training, gradually increasing their capability starting with smaller age-manageable chunks.

To sum up, children have the capability to chunk information, but this continuously developing process requires assistance. Chunking mechanisms can be trained and improved using appropriate training, materials, and contexts. When teaching music reading to young piano students, it is essential to understand and tailor the chunk sizes to the student's age and development, provide effective visual cues and proper reinforcement through frequent exposure. Studies related to chunking and children have demonstrated that children's chunking capability is constantly developing, and that appropriate training and instruction can improve chunking ability, even elevating a child's ability above their typical age level.

Chunking and Music literacy

Chunking techniques are strategies which enhance music reading ability. "Chunks" and "chunking" are defined differently depending on the field of study (Gobet et al., 2016). Although these terms are rarely used in the field of music, the definition of "chunks" and "chunking" in psychology and cognitive science could be applied in music literacy, whereby a "chunk" is a unit

formed from multiple small elements, and “chunking” is the process to build the “chunk”. For example, a “chunk” is a group of music notations which can be as small as the combination of two notes (i.e., interval of a third), or as big as the two to four measures of phrases (i.e., scales, arpeggios, motivic melodic lines, Alberti bass, etc.). “Chunking” is the process of building and perceiving a group of music notations, i.e., a “chunk”, instead of reading individual notes.

The human brain has a limited capacity to remember and store information. Gobet and Clarkson (2004) investigated and examined the chunking theory proposed by Chase and Simon (1973) and the template theory by Gobet and Simon (1996, 2000), detecting the number and size of chunks available in visual short-term memory through testing the copy and recall skills of chess experts. The result suggested that the human brain is limited to remembering about three chunks at a time. Cowan (2010) also argued that the working memory has a limited capacity. Upon analyzing his previous research, Cowan demonstrated that a typical adult has the capacity to store three to five chunks in their short-term memory. He argued that multiple small working memories can link together and facilitate processing more information quickly. Since the human brain has a limited capacity to process information, chunking supports information processing by grouping and linking information.

To translate the mechanism of text reading to music reading, a music note is like a letter in language, a group of musical notes consisting of pitch and rhythmic values becomes meaningful, as words and sentences have meaning. Thus, chunking in music is a very similar process of learning words and sentences in a language. Sloboda (2004) compared the structure of music and language creating three categories: phonology, syntax, and semantics, based on aural perception. Phonologically, language and music have a single unique sound that is individually distinguishable. In regard to syntax, both music and language are composed of individual units

combined to contain meaning and information. The combination in the syntax categories is often formed under a certain principle, such as tonality in music and grammar in language. Then, the semantic categories, which are organized by multiple syntax, deliver information with clear intention and aid in interpreting meanings of the information, such as understanding the structure and format of the music or understanding the sentences and paragraphs in a language. Clear understanding leads to proper actions, such as following instructions or performing music.

Chunking is a common cognitive process in language learning and is applicable to music reading. Examining the correlation between music and language literacy, Barlar (2010) investigated the connection between language reading skills and music sight-reading skills by testing 55 middle school band students after 14 weeks of sight-reading training. While the author found no significant differences in either reading or sight-reading scores between the experimental and control group, there was a positive correlation between language reading and music reading scores. The study supports the possibility that language reading and music reading are involved in similar neurological mechanisms and utilize similar cognitive processes. In addition, Miller (2009) suggested that a developmental approach to language literacy is applicable to the music learning process for children. He remarked upon the cognitive similarities between language and music, including extracting meaning from visual perceptions, proof-reader's error, prediction, and chunking. He argued that music literacy requires a similar pedagogical approach as language literacy in guiding reading, writing, and speaking.

To sum up, the human brain has the ability to process only small units of information but is also capable of grouping smaller units into a larger chunk for easier recall. Since the brain has limited capacity, chunking reduces the number of information bundles that need to be processed. For example, in a nine note musical phrase chunking can reduce the information bundle into two

(a group of four and a group of five notes) or three units (three groups of three notes), increasing processing time and efficiency. Therefore, training chunking techniques in music reading will be beneficial to many music students.

Beginner piano method books and sight-reading books

Chunking is often listed as a strategy to perform sight-reading tasks (Ahrens & Atkinson, 1980; Sloboda, 1978; Saxon, 2009; Zukov, 2009; Pike, 2012), but this concept only starts to be addressed when students have reached a certain level of piano proficiency. Since young students can chunk the given information (Moher et al. 2012) and they learn and practice music reading primarily through beginner method books and sight-reading books, these teaching materials are expected to teach and encourage chunking techniques.

Method books: Many beginner-level piano method books emphasize teaching how to read music, as music reading is an important part of music literacy. Traditionally, reading music has used one of, or a modification of, three common methods, the middle – C, multikey or intervallic approaches (Uszler, Gordon & Smith, 2000). These approaches teach how to read music notations utilizing chunking differently. The middle – C approach introduces one note at a time, while intervallic and multikey approaches stress the learning of intervals and direction, differing in the size of the patterns taught (Uszler, Gordon & Smith, 2000; Jacobson, Lancaster & Mendoza, 2016). While the intervallic approach gradually introduces and develops interval recognition with two-note patterns and landmark notes, the multikey approach presents five-finger patterns and chord playing early. The main issue with these approaches is the lack of attention to integrate both “top-down” and “bottom-up” learning processes; in the middle-C

method, individual notes are mainly introduced, while the intervallic and multikey approaches focus on particular patterns before learners get familiar with individual notes.

Different reading approaches result in activation of different cognitive processes. Emond and Comeau (2013) used an Adaptive Control of Thought-Rational (ACT-R) cognitive model to assess the cognitive and motor processes activated in teaching note reading and piano playing using either the middle-C or intervallic approach. They noted that the intervallic approach requires more and larger cognitive processes than the middle – C approach, supporting the finding that cognitive processes cultivated during music reading develop differently depending on the content and organization of the method utilized. Hence, the cognitive processes used in chunking could be developed if method books introduce music systematically instead of focusing on single note reading. Additionally, if method books display meaningful examples for each chunk with proper visual cues, chunking techniques could be established more effectively. Therefore, the music reading approaches taught in beginner method books are an important initial resource to develop chunking techniques.

Sight-reading books: Sight-reading is often used to measure music reading ability, hence sight-reading books, specifically designed to upgrade scores in sight-reading tasks, are another resource to develop and improve music reading skills (Gaynor, 1995; Ojeda 2010). Sight-reading books are divided into two types: sight-reading supplementary materials, which accompany method books, and independent graded sight-reading exercise books, which are organized based on different levels. Supplementary materials either incorporate content not included in the method books or reinforce the concepts outlined in the method book that needs to be practiced. Independent sight-reading exercise books are designed to promote general sight-reading skills. Therefore, analyzing sight-reading books could provide insights into what sight-reading skills are

expected for each grade, whether any chunking related instructions are introduced in the books, and when and how different patterns and chunks are incorporated within the practice drills.

Music reading is more than a one-way process. Like text reading, it requires knowledge of both letters and words. Thus, after introducing how to read single notations, groups of two note intervals or smaller patterns, further training to develop chunking is required to improve music reading. Despite the importance of developing progressive chunking techniques in music reading, these steps seem to be neglected until learners achieve a certain playing proficiency and interact with sight-reading challenges. Therefore, the current study will discuss how chunking techniques are incorporated in the beginning stage of piano study for young students through investigating selected beginner method books and sight-reading materials for methods which initiate and encourage progressive chunking and suggest practical chunking techniques.

Definitions

In this thesis, the important concepts related to chunking and music reading are defined as follows:

- **Chunk:** A unit of psychological perception. In music, it is a group of notes, be it a rhythmic pattern, melodic figure, harmonic chord, short melodic phrase, ostinato, etc., which can be perceived as a chunk. Due to differences of individual capability, the size and quality of a chunk varies depending on the person.
- **Pattern:** A form of chunks that consist of musical notes that could trigger chunking activity. The patterns present regular rhythmic beats, melodies, or harmonies depending on their types and sizes.

- Fundamental pattern concept: the three basic motions to build a pattern: repeat, step, and skip.
- Conventional pattern concept: the concept that is determined based on the relationship and musical functions in music theory: Intervals, Scales, and Chords.
- Non-conventional pattern: the patterns that are not able to be determined by any fundamental or conventional pattern concepts or the mixture of any of those concepts. These patterns could be grouped by other indications such as fingerings, circles, slurs, or brackets.
- Chunking: A cognitive process to perceive information by grouping elements together to form a unit or a pattern with a musical meaning.
- Chunking technique(s): Strategies to encourage chunking behaviour. These techniques can be introduced gradually, from training to read smaller units of intervals to larger musical patterns and phrases. Chunking techniques are not techniques to force eye movements, because eye movement is a certain behaviour that happens when the chunking occurs cognitively. Chunking techniques seek to train the brain to initiate chunking and, by so doing, lead to the development of certain eye movements.
- Teaching materials: Beginner piano method books and sight-reading books for young beginner piano students. In order to investigate the gradual progression of teaching music reading, materials will be selected from primer level up to level 1 or 2 depending on the structure of the materials.
- Young beginner piano students: Students between the ages of five to twelve, who have less than two years of piano study.

Research Problem and Purpose

Chunking is a beneficial process in music reading, which increases reading efficiency and expands the brain's capacity to play an instrument, specifically the piano. However, it is unknown whether a solid systemic and progressive teaching approach on chunking is available for beginner piano students. Thus, the current study has two main purposes: 1) examine whether existing beginner method books and sight-reading books introduce chunking techniques and how they encourage students to read chunks, and 2) analyze visual cues to initiate a chunking process including physical responses while playing the piano.

This study will investigate the specific inclusion of chunking related content and will review selected piano method books to examine if they introduce teaching strategies to facilitate chunking and build chunking techniques. More specifically, this study will analyze how chunking is presented, how the related instructions are given, and what types of visual cues are depicted to assist the cognitive process of chunking and directly connect to piano playing. Furthermore, the study will discuss the current chunking technique in the method books and sight-reading materials to see if chunking techniques are being developed progressively, from small chunks to larger chunks. To fulfill this purpose, the method books and sight-reading books will be quantitatively analyzed regarding the number of melodic patterns, the number of melodic figures, the sequential expansion of intervals and size of melodic patterns, and the number of reinforcements, including frequency of previously taught melodic pattern's appearance. Qualitatively, teaching materials will be investigated to see how specific instructions are given to introduce chunking techniques and establish pattern recognition. Since physical responses are a clear outcome of music reading comprehension, the second purpose of this study is to analyze how visual presentations found within the method books and sight-reading materials promotes a

proper physical response for playing the piano. This part of the study will be managed through the exploration and description of various visual cues to encourage chunking, instructions on grouping, and exercises to promote familiarity of different melodic patterns. These two purposes will provide the explanation of current pedagogical practices on chunking, specifically for young beginner piano students, and discover gaps which need to be addressed in order to establish a solid systemic procedure to stimulate cognitive chunking behaviours. Furthermore, the findings will lead to further discussions on building musical vocabulary, creating, and teaching progressive chunking techniques, and training physical actions responding to visual cues.

The present study will analyze the contents of the selected beginner piano method books and sight-reading materials based on these research questions:

1. How is chunking related content presented?

- How many patterns are introduced – rhythmic and melodic?
- How many chunks combination of two pitches, three pitches, four pitches and more than four pitches are exhibited?
- How many different sizes of chunks based on the number of notes (two notes, three notes, four notes, and more) are exhibited?
- How is learning reinforced, or how many times is a pattern shown after it is initially introduced?
- How soon and how consistent is reinforcement utilized after a pattern has been introduced?

2. What instructions do the method books and sight-reading materials provide to lead to and build visual chunking techniques, and how clear are the instructions for visual chunking?

3. How do the method books and sight-reading materials connect visual chunks and physical response? What types of visual cues are presented in connection with physical response?

II. Literature Review

To teach chunking and develop chunking techniques, it is important to understand how the brain perceives music, how music elements become a chunk, and what pedagogical strategies are available. This chapter explores previous research and organizes it into three topics related to chunking and music reading. Chunking in musical perception will be discussed through investigating visual perception and motor responses, since the link between visual cues and motor skills displays how a music score has been perceived and processed (Lehmann & McArthur, 2002). After understanding the visual aspects of chunking and its influences on physical responses, the next step is to discover how to build chunking blocks in music reading. While music reading integrates multiple elements, the fundamental elements are rhythm and pitch. Therefore, the second section will focus on building rhythm and pitch patterns and the effective strategies to introduce these patterns. Lastly, the third section will cover different applications and the introduction of chunking for different age groups. This section will present how chunking is applied to teach music reading depending upon the students' age and maturity. Therefore, the section will examine various pedagogical implications of chunking to young children (age 5-12), teenagers and adult/young adult students.

1. Visual chunking in music and motor skills

The chunking process develops based on the data input through different senses, and how they influence each other. In music reading, vision is the domain sense by which information is perceived and visual information is processed to initiate motor actions required to sing or play an instrument. In addition, visual information is the main resource for students to obtain instruction,

learn and practice. Therefore, this section reviews the relationship between chunking and visual perception, and the link between visual chunks and motor skills.

1.1. Chunking of visual perception

Eye movement is a good indication of visual perception. When visual information is perceived as a chunk, certain characteristics of eye movements are observed. Since eye movement has been shown to represent the impact of visual perception on the cognitive process, visual presentation studies have examined what elements of visual stimulation provoke effective perceptual activity, which is chunking. Therefore, the chunking of visual perception is discussed in two perspectives: eye movement and visual presentation.

1.1.1. Eye movement

The research by Smith (1988) investigated eye movements in different timing – temporal conditions, sight-reading, and during music reading and text reading. The research was conducted with forty trumpet students between the ages of eighteen and twenty-five. Participants' eye movements were examined while performing sight-reading tasks, while reacting to different tempi, and while reading music and texts. According to the results, tempo changes had minimum impact on eye movements. However, the findings confirmed two important cognitive behaviours. First, eyes move similarly during music reading and text reading. Smith's results confirm that music reading, and text reading utilize similar cognitive processes. Second, the span of recognition indicated how much information is perceived in each fixation. During visual fixation, the eyes gaze on one location absorbing the visual inputs. This study calculated the span of recognition based on the total number of small units (notes or words)

divided by the number of progressive and regressive fixations. This measurement was not able to provide solid evidence correlating temporal changes and eye movement, nevertheless, the finding suggested that good sight readers could process more notes and words per each fixation because they tend to have longer eye fixations in duration than less skilled sight readers. In other words, good sight readers could process bigger chunks at a time than the less skilled sight readers.

Depending upon the familiarity with a musical pattern, eyes move in particular ways and the eye movements are associated with the cognitive process, chunking. Chang (1993) studied differences in eye movements of pianists reading certain composition styles. Eye movements of six piano major students were recorded while they sight read Baroque, Romantic, and contemporary music. The study found that more eye fixations were observed in good sight readers compared to poor sight readers, and that each visual fixation was longer for good sight readers than poor sight readers. Complex and unfamiliar compositions were associated with more frequent eye fixations and increased duration of each fixation, indicating that familiarity to the music is a factor to improve cognitive processes. This finding suggests that exposing and familiarizing a student to various musical chunks is like building vocabularies and establishing music dictionaries. Therefore, frequent exposure to certain musical patterns would reduce cognitive processing time whenever similar patterns appear in the score. The more musical patterns the pianists are exposed to, the faster they can process the visual information as they perceive the musical pattern as a chunk instead of processing individual notes.

Eye movements are also related to working memory. Arthur, Khuu and Blom (2016) monitored eye movements of twenty university students between eighteen and twenty-one years of age, divided into expert and non-expert sight readers, performing sight-reading tasks.

Focusing on the characteristics of eye fixation and saccades (the rapid eye jumps between fixation points) while sight-reading, the study found a significant saccadic latency in the expert sight-reading group, without any significant differences in fixation duration. The authors argued that saccadic latency is related to working memory capacity and the range of visual processing. Since saccadic latency was observed in the expert sight-reading group, this study supports the possible link between visual chunking and working memory capacity. This means that chunking visual stimuli during music reading has an effect on expanding space capacities within the working memory, providing more memory space within the brain to plan motor actions to respond to the visual stimuli. Sight-reading tasks are commonly used to measure and demonstrate how visual perception leads to physical responses. Thus, Arthur, Khoo and Blom's findings present strong correlations between the characteristics of eye movements and working memory capacity, although the link between visual stimuli and the motor responses needs to be investigated further.

1.1.2. Visual presentation

Since eye movement is an indication of chunking, visual presentation, including visual cues on the scores, directions, markings, and contours of the phrases, facilitates visual perception and hence chunking. Brodsky and Kessler (2017) tested how notational beams that connect group of eighth or sixteenth notes effect visual perception in a group of musicians and non-musicians. Two different studies were conducted, with each study consisting of two tests, a practice trial and actual experimental trial. The first study used a unimodal visual Stroop-like task which examined the impact of visual stimuli, measuring notes, chords, tonality, meter, and rhythm. Using a computer, the participants were asked to identify different musical patterns

pressing “J” for descending notes/beams, “K” for repeated notes/or straight beams, or “L” key for ascending notes/beam. The second study used a cross-modal visual-aural Stroop-like task, testing the impact of aural stimuli interfered with visual stimuli. The results demonstrated that beams congruent with the direction of notation improved non-musician’s visual perception. In addition, non-musicians responded faster when they looked at the beams instead of the notes. However, the study also noted that the visual perceptive information from the notes was more important than the beams. Since non-musicians are not trained to read notes, the beam provided extra visual cues, which were easier to recognize than actual notes. On the other hand, musicians who read music focused on the actual notes. Therefore, for musicians, the visual information from the beam is not as important as the information obtained from the actual notations. This study revealed two important points. First, extra-notational visual cues can assist non-musicians in learning to read music. Second, depending on the relationship between extra visual information and the notations, the music reading can be improved or deteriorated.

Effective visual cues can aid in the chunking process, regardless of expertise. Maturi (2021) conducted two studies examining eye movements, visual presentation, and the influence on chunking. The first study examined chunking abilities between musicians and non-musicians by analyzing eye movements to detect target passages from a complex music score. The second study investigated how different visual presentations of the music score influenced chunking processes between musicians and non-musicians. The second study recruited a total of 124 participants from the State University of New York. The musician group (N=61, 39 females, mean age. 22.28 yrs.) had at least six year of music experiences (mean year of experience = 11.26 yrs.), and the non-musician group (N=63, 30 females, mean age = 18.67 yrs.) had no music experience and no ability to read music. The task was designed to examine participants’ visual

working memory and pattern recognition skills in “legal beamed” and “random-unbeamed” conditions. Two images were presented with a 3000ms time interval, and the participants were asked whether the first image was the same or different from the second image. The images were extracted from less famous Baroque and Classical music passages and the five and six arpeggiated notes were modified depending on the “legal-beamed” and “random-unbeamed” condition. In this study, both groups performed better in the “legal-beamed” condition. Although musicians significantly outperformed the task compared to non-musicians, the results demonstrated that non-musicians unable to read music benefited in distinguishing music notational pattern when provided with specific visual presentations. Thus, proper visual presentation and cues are important factors in helping young beginner piano students develop pattern recognition and chunking techniques.

Introducing correct visual information is critical when information can be perceived through different modalities, such as auditory information, since aural perception can interfere with visual processing. Buonviri (2010) tested the hypothesis that visual imagery of musical notation could enhance melodic memory skills. Buonviri recruited forty-one undergraduate and graduate music students who did not have perfect pitch and tested their responses in two experimental conditions. First, the participants were exposed to only auditory stimuli, then they were presented with both auditory and visual information. After the target melodies were presented in either an auditory format or both auditory and visual formats, the participants were then distracted by other melodic sounds. The participants then listened to two different melodies and instructed to identify the melody to which they were initially exposed. The results indicated that visual presentation had no effect on melodic memories previously developed aurally. The findings of this research demonstrated two factors: First, when the auditory perception occurs

prior to the visual perception, it is difficult to measure the impact of visual presentation. Second, auditory perception might have stronger impact on memorization than visual perception.

Although this study demonstrated that auditory information may play an important role in processing music, the results could also be interpreted that auditory stimulus might hinder music reading when visual information is not presented with the initial auditory stimuli.

Chunking of visual perception is often measured by eye movement. The characteristics of eye movements from good sight readers display how eyes are reacting when chunking occurs cognitively. Various types of visual presentation promote chunking. Visual cues, such as beams and slurs, provide visual chunks and chords represent vertical types of visual chunks. Increasing exposure to different visual chunks improve music reading, and designed training could promote visual chunking and lead to a more accurate response. Visual chunking is a key process to improve music reading.

1.2. Visual chunking and physical response

Physical responses, or motor responses, are body movements that occur when playing an instrument, based on visual cues or auditory feedback. Since the mechanism of visual information processing influences motor skills, chunking may facilitate more efficient motor skills. Therefore, this section will investigate how visual stimuli effects general motor skills and how this mechanism could be extended to reading music and playing musical instruments.

1.2.1. Visual chunking and general motor skills

As motor movement reflects cognitive processes, chunking can be indicated by physical responses. Loehr and Palmer (2007) investigated how chunking and biomechanical conditions

influence finger movements. The study was conducted with twelve participants (1 male and 11 females; age range 18 to 36 yrs.) who played piano for at least 7 years (mean year = 13.67, range 7 – 23 yrs.). The participants were asked to tap four-finger sequences with different fingering whereby the fingering order was indicated by finger numbers instead of musical notation. To examine the biomechanical coupling, sequences were designed with either fourth finger adjacent or non-adjacent conditions. During this task, Inter-tap intervals (ITIs) and motion trajectory were measured. Results from the ITIs, the longer final tap from every chunk, displayed the evidence of chunking and the linkage between motor movement and cognitive processes, However, the motion trajectory, such as speed of down stroke, volume, and finger position was influenced by biomechanical factors since the velocity was more consistent and stable under the fourth finger adjacent condition. This study linked the motion of an individual's fingers with biomechanical conditions instead of the chunking process, but the temporal aspects of the movement engaged the chunking process reducing the temporal intervals between the notes. Thus, motor actions exhibit cognitive processing - chunking, through reduced response time and conversion of visual stimuli to physical action. Since playing musical instruments requires precise timing and complex movement tasks, chunking could assist and promote smoother and more efficient motor movements.

Familiar visual chunks reduce the demands on the visual-working memory and the preparation time needed for the motor movement associated with the visual sequence. A study by De Kleine and Van der Lubbe (2011) assessed the contingent negative variation (CNV), the lateralized readiness potential (LRP), the contralateral delay activity (CDA) and the response time (RT) when familiar or unfamiliar visual sequences were presented. They hypothesized that unfamiliar sequences would increase the load on the visual working memory and lead to larger

CNV. In addition, they argued that larger CNV might also be observed with familiar sequences due to processing larger sections of a familiar sequence, resulting in pressing more keys. Sixteen subjects (7 males, 9 females) aged 18 to 24 years (mean age = 21yrs) participated in two days of testing. On day 1, participants practiced their task: first participants were presented with a visual sequence consisting of six visual cues to move their fingers on either their right hand or left hand, then the participants were given either a “go” or “non-go” cue, indicating whether they needed to actually press the keys or just prepare for the action. When the “go” cue was given, participants had to move their fingers as fast and accurately as possible. During the practice session, the participants learned eight familiar sequences. On the second day, participants had one practice session and three test sessions, during which time an electroencephalogram (EEG) was recorded. The results exhibited an increase in negativity for CNV, LRP and CDA when presented with unfamiliar sequences. The RT was much shorter for familiar sequences than unfamiliar sequences, and participants responded more accurately during the familiar sequence tasks. Therefore, the test results support the authors’ hypothesis that familiarity to the visual chunk reduces the processing load on the visual working memory, impacting motor preparation and execution.

Familiar patterns reduce physical response time because the familiarity of the pattern promotes the chunking process both visually and physically. Verwey and Abrahamse (2012) analyzed the motor responses driven by either internal or external knowledge with twenty-four undergraduate participants. Participants’ motor responses were assessed for three different conditions: familiar sequences, mostly familiar but mixed with some unfamiliar sequences, and mostly unfamiliar but mixed with some familiar sequences. The authors introduced two different modes to trigger the physical response: the chunking mode and associative mode. This finding

suggested that chunking mode precedes faster motor reactions when responding to familiar sequences but may delay processing of unfamiliar sequences. Even though the study was not directly related to playing an instrument, these findings are closely related to chunking processes in music. Consequently, this study demonstrates how familiarizing musical patterns improves music reading and physical response.

1.2.2. Visual Chunking and instrument playing

Frequent visual exposure to harmonic chords with temporal constraints develops the harmonic vocabulary needed to play chords and link chord recognition with motor action. Fjerstand (1968) examined the impact of training with a tachistoscope and metronome. The experiments occurred during a university course with eighteen freshmen and eight sophomore music major students. The students were divided into two experimental groups: perceptual training with tachistoscope and forced response training with metronome. Students who previously undertook the same course were considered as a control group and their pre and post test results were compared with the experimental groups. For the perceptual training group, harmonic chords, or vertical chunks, were viewed through a tachistoscope controlling the exposure time. For the forced response training group, the metronome forced the response time based on the visual perception from the tachistoscope. After training, reading skills were evaluated by playing the extended chord progressions with both hands. The tachistoscope trained students to process the vertical chunks within a controlled time frame and then physically play the chords, while familiarizing the students to various types of chords with different interval combinations. The metronome forced participants to reduce their processing time between receiving the visual information and the appropriate physical response. The study showed that

this controlled training had a positive effect on sight-reading scores in general, but the perceptual training was more effective than the forced respond training approach. Therefore, this study presents a valid example of how visual chunking improves music reading and impacts physical responses. In addition, the familiarization with different chunks could be a useful strategy to institute visual chunking.

Motor movement and its preparation can be modified depending on the chunking instruction in the organization of musical notations. A study by Halsband, Binkofski, and Camp (1994) examined how motor movements in piano playing were influenced by musical notation when notation was organized by rhythmic groupings. Sixteen pianists (age 15-62 yrs. mean age = 32 yrs.) from the Düsseldorf area were recruited. Only data from eight pianists, with three to fifteen years of musical training (mean = 10 yrs.), was analyzed as five pianists were involved in a pilot study to test the procedure and three pianists lacked the necessary note reading skills and were hence disqualified from the experiment. Participants were presented with music scores from three difficulty levels and asked to sight-read the given scores without grouping instructions, or with grouping instructions to organize either a quarter note pulse beat pattern, half note pulse-beat pattern, or meter influenced pattern such as “strong-weak-weak” for $\frac{3}{4}$ meter. Each performance was recorded to analyze movements. The study authors found that movement from half of the participants showed grouping behaviours prior to being given grouping instructions. Following the grouping instructions, the performances from five out of eight pianists was more regulated and temporally accurate. After three practice sessions, seven out of eight pianists clearly presented grouping behaviours as seen through their performance. After grouping instructions, their temporal continuity and hand coordination improved, since grouping clarified musical ideas and aided in understanding the musical content. Additionally,

the results demonstrated how motor movement was reprogrammed and reorganized when patterns were organized differently, for example in quarter note mode versus meter pulse beat groupings, with rhythmic groupings improving temporal accuracy and continuity. Therefore, this study showed that motor actions are modified reflecting how information is processed.

Depending on the nature of the instrument, visual chunks can lead to very specific physical responses to play the instrument. Kuo (2012) investigated the relationship between melodic figurations and body movements while playing the marimba. This study categorized the melodic and harmonic figures from selected composers' compositions on sight-reading and presented their influences on the marimba playing techniques. Kuo summarized sight-reading strategies and discussed the connections between vision and movement. Kuo suggested that after scanning the music for the range, key and time signatures, and style and tempo, that players should organize the rhythmic and melodic patterns before playing the instruments. In addition, the author explored different levels of repertoires to improve sight-reading tasks on marimba and proposed appropriate body movements and hand positions to achieve these tasks. Kuo demonstrated that detailed motor responses to melodic patterns could promote prompt physical responses when melodic patterns are perceived through visual cues, and eventually improved with sight-reading.

To formulate and train kinesthetic chunks, anticipating temporal aspects are essential instead of repeating mindlessly. Gobel, Sanchez, and Reber (2011) investigated the effects of motor sequence learning. Using a serial interception sequence learning (SISL) task, explicit recognition test, and free recall test, motor reactions based on visual cues were assessed for fifty-three randomly selected participants from an introductory psychology course. As a follow up, twenty randomly selected participant learned a specific sequence and timing, performed a

transfer test, whereby the sequence and timing were manipulated, and then executed a recognition and recall test as performed in the initial experiment. While the first experiment required a series of simple repeating sequential tasks, participants in the second experiment were required to remember four conditions – sequence, order of sequence, same time, opposite orders. The authors demonstrated that when timing was added to sequence learning, tasks were performed more accurately. Time intervals between sequences allowed the sequences to be recognized as a chunk. For effective learning of motor sequences, sequences need to be presented as smaller chunks. Since timing is a sequence divider, changing the timing can cause confusion in recognizing the chunks. Thus, practicing motor chunks starts with recognizing the chunks. Once a clear cue is associated with the chunk, the motor sequences can be learned and practiced.

In music reading and sight-reading, motor action reflects how information is processed. Eye movement is a good indication of the chunking process as many good sight readers present similar eye behaviours when processing the information as a chunk (Chang, 1993; Barlar, 2010; Arthur, Khuu & Blom, 2016; Maturi, 2019). Since chunking initiates certain behaviours of eye movements, training eye movement is not, by itself, a trigger to promote chunking behaviour (Gaynor, 1995). However, visual cues and presentation can lead to chunking behaviours when they clearly provide instructions for chunking or provide a meaning for the chunks. In addition, visual stimuli are also an important cue to link visual information and motor actions. The more complicated the visual information, the more time is required to decode the information and guide the motor actions. This process can be practiced and improved. However, when required to react promptly, such as during sight-reading tasks, chunking can reduce the amount of

information, decrease the time to process the visual information, and encourage a more rapid physical response.

2. Building chunking techniques in music reading

Music reading is perceived mainly through visual information and confirmed by a physical response such as singing or playing the notes. Rhythm and pitch are fundamental elements to music reading, like learning individual letters in a language. To develop chunking techniques, it is important to explore how these core pieces are related and processed in learning.

Building chunks in music reading is multidimensional, building from a group of single elements, such as a note with the time value and pitch, to a group of multiple elements, such as a mixture of rhythm, pitch/melodic patterns, harmony, and phrases with articulations and dynamics. To evaluate music reading skills, rhythm and pitch are often tested together (Beeler, 1995). Sight-reading or sight-singing are common tools to measure music reading skills as these tasks test the physical responses stemming from the perception process. Rhythm and pitch accuracy are the main elements to assess while sight-reading. When the brain processes rhythm and pitch faster without undue processing time or effort, the brain can spare more capacities to process other information from the score (Cowan, 2010). Thus, when the brain processes the basic music elements faster, the brain develops more capacities to engage the motor movements more accurately. This section discusses how pitch/melody and rhythm can be approached to establish a chunk and how chunking takes place in music reading.

2.1. Pitch/melody chunks

Several studies have undertaken to investigate various approaches to develop melodic chunks and its impact on music reading, more specifically on the performance of sight-reading/singing tasks. A harmonic chord is a vertical format of a melodic chunk and training chord recognition can improve specific sight-reading tasks. Cox (2000) identified music analysis before playing, the duration of piano experience, and pattern recognition ability as three important factors that closely related to sight-reading ability. Cox then examined the relationship between these three factors and sight-reading ability by evaluating eighty-four college music students (28 piano majors, 37 voice majors, 8 brass majors, 6 woodwind majors, and 5 other instruments). An interview with questionnaire was conducted to collect data regarding the pre-playing music analysis and piano experiences of each participant. Then, a chord recognition test and sight-reading task were administrated to investigate the correlations between the variables. A positive correlation between sight-reading scores, chord recognition test score, and piano experiences was observed, while the process of music analysis showed the least correlation with sight-reading. Since participants with higher chord recognition tests scores also performed the sight-reading task with more accuracy, Cox claimed that the participants who recognized the chord quickly had more time to execute other musical elements during the sight-reading task, enhancing their performance accuracy. Therefore, training students to recognize harmonic chords (both broken and blocked) is one way to establish melodic chunking skill.

Similar to language development, which introduces both single letters (phonetic) and words (lexical), music reading can benefit from teaching both individual notes and the patterns simultaneously with sequential building blocks instead of emphasizing one element over the other. Bluestine (2007) applied four different approaches to teach music reading to young

children in grades three, four, and five. A total of one hundred children participated in the study and were evenly divided into four treatment groups. The first group (N=25) practiced reading patterns with visual note presentation, the second group (N=24) was instructed to read individual pitches in the patterns – singing only tonic and dominant tone, the third group (N=26) read the whole pattern first before reading the individual pitches, and the fourth group (N=25) were trained to read individual notes first and then practiced singing whole patterns. The students were trained for sixteen weeks with two 20 minute sessions per week, and their reading skills were tested by Generalization-symbolic test (GST) for sight-reading and Vocal Performance Test of Patterns (VPTP) for sight-singing. Although no significant differences were observed among the four groups, and no correlation between sight-reading skill and sight-singing skills were found, the author found that the highest mean score from the GST test was observed in the fourth group, who were trained to read individual notes and practice the whole patterns, followed by the second group, who practiced reading individual notes. In addition, 11 out of the 25 students from the fourth group scored above 80% in the sight-reading assessment. As a result, teaching smaller units, starting from individual notes, and gradually expanding into larger units (whole patterns), is more beneficial for improving young children’s music reading skills than introducing whole patterns initially.

Clear labeling and visual cues are beneficial for establishing chunking habits to process melodic notes. A study by Lörch (2021) investigated whether familiarity with a pattern and the melodic structures that initiated chunking would improve the accuracy of memory recall. The experiment was divided into two sections. In the first section 87 participants were recruited, 29 of which were musicians, and presented with triadic sequences in one of two conditions: chunking supportive sequence and chunking obstructive sequence. The participants looked at the

presented notes online, memorized the notes, and then were asked to recall the notes. The second experiment was conducted in a similar manner, but the four-note cadential sequences were used as a stimulus and the cadential sequence was also presented with either authentic cadence as a chunking supportive stimuli or random cadence, representing chunking obstructive condition. For the second experiment, a total of seventy-three participants completed the test, ten of whom were trained musicians. The recall accuracy was examined in three areas: notes, melodic group, and transitional errors, whereby the rate of transitional errors indicated the tendency of chunking behaviours. The findings indicated that chunking supportive stimuli led to better accuracy rates in general. Additionally, the participants with musical training had better accuracy than non-musician participants, which indicated that musical experience motivates chunking behaviours. Thus, melodic chunking can be initiated by clear labels and experiences. Also, melodic chunking increases the accuracy of music reading.

In the study by Kuo (2012), introduced in an earlier section, the manner by which melodic patterns were processed and connected to the physical action of playing an instrument, in this case the marimba, was demonstrated. Kuo proposed the types of musical patterns and repertoires to practice which could aid in building visual chunking and physical movement. Specifically relating to melodic patterns, this study provided a fundamental procedure to establish sequential chunking techniques. To recognize the pattern, the author noted that first students needed to become familiar with small intervals, scales, and arpeggios in any tonal key. Next, students needed to practice reading two notes, gradually extending the interval to establish a prompt perception of visual information and judge the physical distance while looking and measuring the distance from the instrument. The author then suggested to work on recognizing patterns based on the musical style and content, like harmonic and melodic figures, phrases and

more, initiating awareness of the music structure and pattern. The fourth level for linking visual chunking and physical movement was to recognize accompaniment patterns from the bass and treble clefs, understanding the functions of tonic and dominants. When students develop the ability to group single note patterns, chord recognition can be developed through analyzing intervals of the chord notations and visualizing physical hand and arm motions reflecting the distance of the intervals. Although the purpose of this study was to improve sight-reading performance utilizing strategies to connect visual cues and kinesthetic senses, the research demonstrated how melodic patterns can be built horizontally, from two note units to a whole section of accompaniment patterns, and vertically, from a note to three or four note chords.

2.2. Rhythmic chunks

This section explores the studies that examine rhythmic chunking and identifies elements of teaching rhythm which aid in developing rhythmic chunks and patterns. First, verbal cues identifying the rhythm initiate understanding different rhythmic values before formulating the rhythmic patterns. A study by Bebeau (1982) compared the impact of two rhythmic-reading instructions. The experiment was conducted first in a small group (N=27) then repeated in a larger sample population (N=80). In the first experiment, twenty-seven 3rd grade students, randomly divided into two groups, participated in the study: one group (N=14, 9 boys and 5 girls) received mathematical based traditional rhythm-reading instruction and the other group (N=13, 8 boys and 5 girls) received speech cue method instruction. The treatment was administered for eighteen sessions. The rhythm reading ability of the two groups was then assessed, with participants tested on reading 23-rhythmic patterns with a combination of twelve rhythmic concepts. The second experiment was conducted with the same materials, for the same

duration, given the same instructions for each group, with data collected from only thirty chosen students from each condition out of eighty students. The author's findings showed that students instructed with the speech cue method demonstrated greater improvement in general. Although the first experiment with a smaller sample size displayed a more significant improvement for the speech cue method than what was observed in the second experiment with the larger sample size, both experiments demonstrated that the speech cue method facilitated rhythm reading for young children. The speech cue method is a combination of the Orff and Kodaly's rhythmic systems, which teaches rhythmic concepts using a word and creates verbal cues for small rhythmic chunks, such as two eighth notes, four sixteenth notes, a combination of a quarter notes and an eighth note, and a dotted eighth note and sixteenth note. While the traditional approach focuses on teaching individual rhythmic note value with clapping exercises, speech cues provided two important elements to develop chunking: verbal context that can be related to group of notes within the meter, from two notes up to four notes, and clear indication of duration for each note (e.g., "great big whole rest" for a whole rest, and "wa-ter-me-lon" for whole note to hold four beats). Thus, this study presented the benefit of rhythmic chunking instructions using speech cues.

Teaching rhythmic patterns builds rhythmic vocabulary and has a positive influence on music reading. Azzara (1992) demonstrated the positive correlation between exposure to pattern learning and improvement in sight-reading skills. While the study was designed to investigate the impact of an improvisation curriculum, the findings connect rhythmic chunking techniques and music reading learning since one of the main components of the intervention was rhythmic pattern training and the effectiveness of the curriculum was tested using a sight-reading task. For this study, sixty-six fifth grade wind and percussion students from two different schools followed

the improvisation curriculum for twenty-seven weeks during the school year. Students' music aptitude levels were evaluated before the initiation of the curriculum and their musical achievements were evaluated by performing three etudes including a sight-reading task after the twenty-seven weeks. The findings showed that teaching improvisation aided young students' music achievement regardless of the student's initial music aptitude level. Interestingly, depending on the task, the mean score of students with the lowest music aptitude level was higher than the mean score of the students with the medium music aptitude level. Based on the findings of the study, Azzara claimed that learning and understanding both rhythmic and melodic patterns could improve a student's musical sense which reflects on their music reading ability, improvisation, and expressive performance. Although this study contained multiple stimuli and a broad measurement to examine general music achievement, it demonstrated how rhythmic patterns could be incorporated and taught within the curriculum and connected to music reading skills.

Since timing is an important element of rhythm, cues for temporal guidance assists processing rhythmic groups and improves temporal continuity. A study by Beeler (1995) investigated the influences of two specific instructions on sight-reading tasks: interval pre-study and a cue for rhythmic continuity. The study was conducted for five-minute sessions, twice a week for four weeks with a group of fifty piano students. The students were divided into four groups: sight-reading with digital sequencer accompaniment, sight-reading with interval pre-study, sight-reading with both digital sequencer accompaniment and pre-study, and a control group. The findings demonstrated that the group with the digital sequencer accompaniment improved the most and performed better than any other groups, while the group with both digital sequencer and interval pre-study showed the least accuracy. The role of the digital sequencer in

this study regulated and promoted the rhythmic continuity which also provided cues to group notations based on meter. This digital sequencer accompaniment acted like a metronome and provided non-verbal instruction for note groupings based on rhythmic meter. While Beeler's experiment focused only on rhythmic continuity, the study's results can be generalized to suggest that temporal cues can function as an effective element to trigger rhythmic chunking.

Just as a proper cue is important to aid in chunking (Bebeau, 1982; Beeler, 1995), so too proper instruction is a key component to help sight-reading rhythmic patterns. McCabe (2004) compared traditional rhythmic instruction without any movement activities with movement-based rhythmic instruction on the ability to sight-read patterns using eighty-one middle school students (between grades 6 and 8) divided into a control group (N=41) and an experimental group (N=40). For eighteen weeks, each group had a daily 15-minute rhythmic training session for five days per week. The control group was only allowed to vocalize the rhythm and depend on their mental imagery and internal pulse to process the rhythmic patterns, while the experimental group used foot tapping, clapping, and engaged in activities during the training session. The Watkins-Farnum Performance Scale Rhythm test was administered before and after the training period, and both groups were trained with rhythmic materials that introduced various rhythmic patterns. The findings found that both groups improved their scores on the rhythmic sight-reading test, however, the experimental group demonstrated greater improvement than the control group. More specifically, the experimental group tended to transfer their rhythm reading more smoothly to instrumental playing. This study demonstrates the importance of the specific instruction to process rhythmic patterns. Since both groups employed the same training materials containing a series of rhythmic patterns, training with rhythmic patterns enhanced rhythm reading skills for all participants, but the addition of the kinesthetic feedback led to better test

results. Therefore, proper instruction on processing rhythmic patterns can provide extra meaning and context for each rhythmic chunk and upgrade sight-reading skills.

Laing (2007) investigated how rhythm pattern training influenced sight-reading skills for woodwind and brass players. Fifty University Band ensemble members were divided into a control group (N=25) and an experiment group (N=25), however, data from only thirty-seven students who completed the tasks was included in the analysis. The experiment was conducted for a total of six weeks including a pre-test in week 1 and post-test in week 6. For the intervening four weeks, students were trained for 15 minutes during each rehearsal, with each session following a four-step rhythm drill practice: individual counting and clapping, echoing a leader's count and clapping as a group, sizzling with the instrument, and playing the rhythm on their own instrument. A different rhythmic pattern was introduced for three weeks, and the participants reviewed the patterns on the fourth week. While the experiment group had an isolated rhythm session, the control group continued with their regular rehearsal practice following the rhythm practice. Both groups showed significant improvements between the pre-test and post-test, but no significance was found between the groups. This study attempted to examine the effectiveness of isolated rhythm pattern training for sight-reading skills but found that sight-reading skills can be improved over time without requiring a specific rhythm pattern session. The design of this study focused on building rhythmic vocabulary through increasing exposure to certain patterns. However, specific instructions to promote chunking activities were missing and the duration of the instruction was potentially not long enough for participants to store the rhythmic patterns in their memory and use them in sight-reading tasks. Practicing rhythmic drills is one way to build rhythmic vocabulary as patterns are stored into long-term memory, but it is unclear if students learn to process the rhythm as a pattern or as individual note values. Thus, specific instructions

are required to establish a rhythm chunking techniques at the cognitive level, rather than introducing multiple patterns without systemic and sequential plans.

Pike and Carter (2010) examined the impact of chunking techniques on sight-reading improvement with forty-three beginner piano college-age students. To differentiate the impact of rhythmic chunks and pitch chunks, this study divided the participants into three groups. The control group was given no instructions on chunking drills and provided with no exercises to practice. The second group spent time practicing chunking rhythmic drills, while the third group practiced chunking melodic drills, with the melodic drills presented in several different keys. The chunks for each drill were presented visually, but the second rhythmic group was allowed to tap and work with a MIDI accompaniment. To encourage chunking, specific visual cues were provided for the third (pitch) group. The group which was given the pitch drill exercises practiced general sight-reading skills including pitch, rhythm, and continuity, and exhibited the most improvement in sight reading. The rhythmic drill group showed improvements in only rhythm and continuity. Although the rhythmic drill group displayed the least pitch accuracy in the sight-reading task, this study indicated that rhythmic drill practice can contribute to developing the temporal sense. Laing (2007) and Pike and Carter (2010) each studied the use of rhythmic pattern drills. Pike and Carter provided MIDI accompaniment to encourage chunking of rhythmic patterns, while Laing (2007) used only instruction, clapping and echoing. Therefore, the results of these studies emphasize the importance of instruction and use of cues to initiate and promote chunking behaviours beyond the simple presentations of drills and exercises.

The frequent exposure to different rhythmic patterns is one strategy to develop rhythmic chunking behaviour and, logically, more frequent exposure to certain rhythmic patterns could aid in the “top-down” process of rhythm reading. In general, music reading skills improve with

musical experience regardless of practicing rhythmic drills or reading single note values. However, mnemonic systems (Bebeau, 1982), temporal guidelines (Beeler, 1995; Pike & Carter, 2010) and various connections with meter-reflected movements (McCabe, 2004) facilitate cognitive grouping processes through providing a possible boundary for the grouping and a visual or aural indication of the grouping. To sum up, practicing rhythmic drills can build rhythmic vocabulary but may not be directly associated with music reading. Depending on how rhythm reading is introduced, rhythmic chunking can be initiated using mnemonic methods starting with two or three note groups and practicing larger size chunks with temporal cue and appropriate instructions. Rhythm reading can be improved when rhythmic chunks are introduced considering about the meaning of the chunk, a cue to initiate memory storage and recall, and the frequency of the exposure. The above studies presented strategies used to develop the chunking process, and demonstrated how rhythmic patterns and drills are independent variables which effect music reading. Due to the limitations of training interventions, including duration and sample size, it is still difficult to generalize the impact of rhythm chunking on music reading.

In conclusion, these studies presented mixed results depending upon the experiment design, sample size, intervention instructions, and the experiment duration. When the studies employed a pattern treatment to increase familiarity and exposure to patterns (McCabe, 2004; Laing, 2007), the results indicated no significance between with trained and un-trained groups. However, when the studies provided very specific instructions and additional cues to initial chunking while reading the patterns, the findings tended to be more significant (Bebeau, 1982; Beeler, 1995). In addition, the pitch/melodic pattern treatment contributed to improved sight-reading skills, while training with only rhythmic patterns solely improved timing or had no difference compared to the control group (Pike & Carter, 2010; Lörch, 2021). One potential

reason for this observation is that pitch and melodic patterns are processed more effectively when visually presented and associated with more content and meaningful labels, such as in harmonic chords (Kalakoski, 2007; Teo, 2020; Souza et al., 2021). Lastly, considering the variability of individual's cognitive processes, some individuals may develop chunking abilities without any instruction or training. Due to differences in individual cognitive abilities, the effectiveness of pattern training is not only challenging to measure, but also difficult to determine. Therefore, structural, and systemic presentations and instructions associated with initiating chunking need to be evaluated, instead of assessing the effectiveness of pattern drills without any specific training strategies.

3. Pedagogical instruction on chunking in different age groups

The previous sections discussed cognitive aspects of chunking and the musical elements that assisted in the creation of chunks. This section focuses on how to teach and denote chunking techniques to different age groups. Saxon (2009) listed traditional methods and approaches to teach sight-reading. Guiding students to develop chunking behaviours was one of the strategies. To familiarize students with chunking behaviours, teaching and training strategies are needed. Sloboda (1978) suggests that repeated exposure to different musical patterns helps improve music reading skills, along with increasing music awareness, gathering inspiration, enhancing general musical knowledge, and developing the inner ear. Method books and other training materials can provide effective materials to develop chunking drills (Pike, 2012). Essential to improving reading skills using chunking techniques, repeated exposure to pitch and rhythmic drills is required to enhance a student's musical "vocabulary" with the aim on building musical "sentences". Chunking can be incorporated into teaching regardless of the age of the pupil.

However, pedagogical approaches and the presented content differ based on the maturity of the students. Therefore, the studies in this section examined different music reading instructions for students in different age groups: young children, teenagers, and young adults/adults.

3.1. Young children: K – Gr. 6

For young children, musical patterns are taught mainly through rote teaching with auditory stimuli (Dunlap, 1989; Reifinger, 2007; Bugos & Mazuck, 2013; Thomas, 2016), as listening and echoing activities are easy to instruct and provide a clear indication of knowledge acquisition. However, music reading is required to understand the visual information presented in a musical score and convey the visual information into sound. Therefore, the studies reviewed in this section focused primarily on visually presented intervention – both rhythm and melody.

The more time students spend reading, the better reading skills they will develop. A study by Searle (1985) investigated whether rhythmic movement exercises assisted students in synchronizing their movements to music, and whether exercising rhythm with movement and reading rhythmic pattern flash-slides improved students' sight-reading skills. One-hundred and seventeen students in Gr. 5 (N=53) and Gr. 6 (N=64) participated in the twenty-four-week experiment conducted during the school year. The participants were randomly divided into four groups. The control group (N=30) were given a general lesson consisting of echoing the teacher's rhythmic and melodic pattern demonstration using solmization, playing the patterns on the recorder, reading melodic patterns, verbalizing the rhythmic exercises, and the practicing the patterns individually. The general lesson did not include any kinesthetic movement or reading rhythmic pattern flash-slides. The first experimental group (N=30) was instructed to move their body when they practiced rhythmic patterns, while the second experimental group (N=28) spent

time reading rhythmic pattern flash-slides during the lesson without any kinesthetic movement. The third experimental group (N=29) incorporated both movement exercises and flash-slide reading. Focusing on sight-reading skills, Searle created a criterion-referenced test and examined students' skills on rhythmic verbalization and evaluated the performance of rhythmic and melodic etudes played on the recorder. The rhythmic and melodic etudes were prepared either under the guidance of the teacher or self-directed. The author found that the control group demonstrated the highest mean score, while the mean score of the first experimental group with rhythmic movement displayed the lowest score on overall performance and sight-reading tasks. The second experimental group, which used pattern flash-slides, performed the best in both teacher-assisted and self-directed sight-reading of the etudes. However, the control group performed better in the general sight-reading tasks than other experimental groups. Searle suggested that the control group and second experimental group scored better in sight-reading than the other groups, since the first and third groups divided their attention between visually learning the patterns and learning the rhythmic movements. In addition, the improved sight-reading score from the control group suggested that the rhythmic flash-slide training was ineffective. According to this study, sight-reading skills can be improved through reading and verbalizing rhythmic patterns without any movement or flash-slide involvement when students spend time actively reading. Although flash-slides can be an effective visual stimulus used to increase exposure to various rhythmic patterns in a short period time, it may not be as effective without the accompaniment of instructions connecting the patterns observed on the flash-slides and those within the musical scores.

As an extension to the investigation of the relationship between pattern exercises and music reading skills for young children, transferability, the ability to apply previous knowledge

to a new task, is an important feature to link pattern recognition to music reading. Chivington (1990) studied whether learning rhythmic and melodic patterns could improve the performance and sight-reading ability for members of a children's choir. Chivington specifically addressed whether rhythmic and melodic pattern instructions would be more beneficial than rote learning from songs without any indications of smaller patterns, and which learning process would be more transferable when the students needed to read modified or less familiar patterns. This study was conducted with sixty-five students in fourth and fifth grade, divided into two choir groups. The first choir group (N=25) consisted of eleven fourth graders and fourteen fifth graders and were trained to find short segments of rhythmic and melodic patterns, which was practiced using a neutral syllable and solfege. The second choir group (N=40), consisting of fifteen fourth graders and twenty-five fifth graders, was taught using the rote teaching approach, whereby the students echoed the melodic phrases with lyrics without any instruction or attention to the patterns after the teacher sang. Both groups had an equal opportunity to learn new rhythmic patterns through echoing and reading rhythmic patterns and tonal patterns with the neutral syllables and solfege. After a general learning session, each group followed the group-specific treatments for sixteen sessions (twice a week for eight weeks). In the eight weeks, the first choir reviewed the patterns that they studied while the second choir sang through the entire songs that they learned. Before the training, a pre-test evaluated the rhythmic and melodic pattern reading skills of the participants. The post-test consisted of eight rhythmic and eight melodic patterns containing a mixture of familiar (50%) and less familiar (50%) patterns. According to the pre-test results, both choirs scored similarly on reading skills. After the treatment, the first choir using pattern learning improved in melodic pattern reading for both familiar and less familiar melodic patterns. However, no significant differences were observed in sight reading rhythmic

patterns between the two groups. Thus, the findings suggest that melodic pattern instruction assists in improving music reading skills and is transferable for reading slightly different patterns.

Focusing on teaching melodic patterns to young children, a study by Bluestein (2007) investigated the impact of the pattern teaching in tonal music reading to young children between grade three and five by assessing four teaching approaches: teaching only the pattern, teaching individual notes, teaching individual notes followed by pattern instruction, and first teaching the pattern than the individual notes. Sight-reading and sight-singing skills were assessed using the generalization symbolic test (GST) and the vocal performance test of patterns (VPTP). In general, no significance differences were found among the experimental groups, with the VPTP test displaying very similar mean scores among the groups. Nevertheless, the group instructed first on the individual notes followed by pattern training performed better in the GST test with forty-four percent of the group achieving above eighty percent on the test, while the group with whole pattern instruction showed the lowest mean score and the least number of students achieved above eighty percent. Although the findings are not strong enough to generalize the impact of each pattern related teaching approach to young children and the small sample size and training duration are notable limitations, the improvements observed in the group with individual note and pattern instruction support the importance of utilizing a sequential approach to build the size of the chunks in both a “bottom-up” and “top-down” approach. Sustained training in this manner could eventually establish chunking behaviour and improve music reading.

The effectiveness of melodic chunking can be measured by testing how children recognize previously learned patterns in new repertoires. Reifinger (2007) demonstrated that learning melody patterns improved music reading. One hundred ninety-five second-grade

students participated in fifteen sessions of training with two reading strategies (solfege singing and *loo* singing) using either songs with familiar or unfamiliar patterns. During each session, students learned new melodic patterns, and practiced previously learned patterns and a song by rote. The findings exhibited three important advantages to teaching musical patterns to young children. First, when students learn and become familiarized with melodic patterns, their knowledge can be transferred when reading unfamiliar patterns. Therefore, experiencing the melodic chunks works like building a melodic vocabulary. Second, using solfege improves sight singing familiar patterns, and *loo* singing works well when singing unfamiliar patterns. Thus, adopting and applying both solfege and *loo* singing techniques to melodic patterns support and complement each other. Lastly, the author noted that teaching by rote, combined with visual pattern reinforcement, improves music reading skills.

In an effort to build chunks of notations, recognizing an interval between two notes can be the starting point for young children to read and recognize chunks. To compare the efficiency of teaching individual notes and intervallic relationships, Ojeda (2010) conducted eight weeks of training with fifty-two fourth and fifth grade students. The participants were divided into two groups: the Solfege Group and the Intervallic Group. During the eight-weeks, students were exposed to rote-to-note instruction with vocal activities for both groups. The findings demonstrated that both approaches enhanced music reading skills, with no significant differences observed between the two approaches. While no evidence supports the effectiveness of the intervallic approach over teaching individual notes, the intervallic approach presents the smallest unit of the melody chunk, suggesting that, as a starting point, the intervallic approach can introduce melody chunking for young children.

Considering the maturity of this age group, chunking training is mainly designed through echoing rhythmic or melodic patterns while showing and pointing to the notations. Different types of vocalizations can link visual notations and sounds of the notations and vocalization or body movements, such as clapping and tapping, can be beneficial in training. However, due to limitations of sample size and treatment durations, most of the reviewed studies did not find a statistically significant difference in training regimes impeding the generalization of the efficiency of chunking training. Young students can enhance their exposure to different patterns through pattern instructions, but they require instructions, such as clear markings, instruction on making patterns meaningful, and hence easier to remember, and the utilization of smaller sizes, to establish chunking. One caveat to note is that improvement to music reading may vary on the size of the pattern and number of patterns the students are exposed to during the training sessions. Moreover, training melodic patterns may be more beneficial to young students as they have a greater tendency to make pitch errors rather than rhythmic errors (Gudmundsdottir, 2003). Therefore, when young students are trained to recognize more melody patterns, the students are better able to accurately read different melodic patterns.

3.2. Teens: Gr. 7 – Gr. 12

Teaching chunking to teens can utilize more complex approaches than for the younger age group. Although the purposes of the reviewed studies were primarily to identify approaches to improve music reading, specifically sight-reading, the maturity of this age group allowed the investigation of more complex and cognitive elements in music reading.

Gaynor (1995) questioned how chunking and melodic prediction were related to music comprehension. Adopting Smith's (1994) theory, which claimed that chunking is a natural

cognitive phenomenon in text reading comprehension, Gaynor applied two different pedagogical approaches to fifty-nine flute students aged thirteen to eighteen. The first approach sought to teach eye movement and the other to train memory recall. Melodic prediction was trained using phrasing, patterns, contour, and tonality. Another element of this study sought to explore how these approaches work differently for skilled and less-skilled participants. To assess music reading, this research used a music reading comprehension test based on the Watkins-Famum Performance Scale (Watkins-Famum, 1962) and a researcher-designed criterion-referenced test. The author found that melodic prediction training improved music reading comprehension, and while training eye movement and memory recall did not have an impact on music reading, it improved the abilities of less-skilled participants. During the training, participants were taught to control their eye movements and memory recall to initiate chunking. However, if the participants were trained to read chunks instead of training their eyes, their eye movements would have automatically modified to accommodate the chunking process. This study demonstrated some useful strategies to improve music comprehension, but the hypothesis relating chunking and eye movements needs to be reassessed.

Compared to the younger age group, the teen age group has sufficient maturity to process visual stimuli. Houghton (2018) focused on investigating the effects of sight-reading strategies and cognitive processes on sight-singing. The study collected data from fourteen eighth grade middle school choral students. First, the author sought to identify the strategies currently used by the students. Then, the author identified common strategies observed from the students' behaviours. They noted that visual perception was the dominant cognitive process and that the more frequently the strategies were used, the higher scores the students achieved. Houghton suggested that curriculum designed to improve sight-singing skills should be built to contain

techniques to develop chunking skills and establish strong musical cognitive processes. Therefore, from a pedagogical perspective, visual chunking is a useful strategy to improve music reading and is closely related to the cognitive process. Visual chunking will develop automatically over time, but it is also a teachable skill dependent on how the curriculum is designed to teach this strategy supplementing other strategies, such as creating auditory representations, self-awareness, and other perceptual trainings.

In terms of music reading and intelligent level, this group is capable of processing more complex information and their visual perception appears to be stronger than the younger age group, however, there are few studies that focus on learning and teaching chunking techniques.

3.3. Young adults & Adults

Due to the maturity of the subjects, studies examining the impact of different training systems in young adults/adults provided specific instructions on controlling the environment and focused on the impact of designed interventions on chunking behaviours. Pajtas (2002) investigated the impact of teaching tonal patterns to adult beginner piano students. Forty college students between 18 and 22 years of age who registered for an elementary piano class participated in the study, however, only twelve students from each group took the sight-reading test. The control group (N=20) received traditional piano instruction, learning note names, intervals, chords, and common patterns such as major and minor five note scales. The experimental group (N=20) was given additional pattern recognition training, guiding participants to label different patterns of three to five notes. The pattern recognition training gradually introduced increasingly complex patterns, starting with three notes presented in a scalar pattern, repeated notes, interval 2nd or 3rd, and progressing to five notes consisting of

larger intervals such as the 4th, the 5th, the 6th etc. The experiment group was also assigned a pattern reading assignment with flash cards. Additionally, the experiment included appropriate visual cues on the scores to allow participants to apply sight-reading techniques to read new and unfamiliar repertoires, reflected on their assessments on reading new music. Both groups were given a 50-minute class, three times a week, for fifteen weeks. Twelve volunteers from each group performed a sight-reading piece following a five-minute practice session with their performances recorded. Due to the small sample size, the overall results found no significant differences. However, the experimental group scored better in tonal accuracy and exhibited better reading skills for unfamiliar and complicated phrases than the control group. This study demonstrates how systematic pattern teaching can be gradually introduced using clear labels, creating meaning and context, which supports working memory processes.

While Pajtas (2022) focused only on tonal patterns, a previously introduced study by Pike and Carter (2010), conducted with forty-three beginner piano college aged students, investigated the impact of rhythmic and pitch chunks. Participants were divided into three groups. While no specific instructions were given to the control group, the second group was asked to practice rhythmic drills and the last group to exercise melodic drills. The melodic drills were presented in several different keys. Although each drill was visually presented, rhythmic drill practice was accompanied by tapping or MIDI program. As used by Pajtas (2002), visual cues were presented to encourage grouping pitch/melody. This study discovered that the practicing pitch drills improved pitch, rhythm, and continuity of sight-reading performance, while the rhythmic drill group only improved in rhythm reading and continuity. Since both the control and pitch groups improved in their pitch scores, it is difficult to prove the impact of the pitch drills. However, both experimental groups improved in rhythm and continuity on sight-reading tasks, suggesting the

positive impact of chunking drills in general. This study also indicated that rhythm and pitch chunking were beneficial for participants whose physical responses were not trained.

The study by Teo (2020) explored visual chunking behaviours in advanced string players. Monitoring how college music students engaged chunking when sight-reading three different stylistic repertoires, this study also compared performances from students who used visual cues to assist with chunking and those who did not, and analyzed how strong sight readers and weak sight readers managed these tasks. Sixty-one advanced violinists were invited to sight read three excerpts from Baroque/Classic, Romantic and 21st Century repertoires. For each task (Excerpt A, B and C), about two thirds of the participants (44, 45 and 41 participants, respectively) marked chunks and the chunks were categorized into either size chunks (micro or macro) or stylistic chunks (features demanding technical and physical attention to play, such as string crossings or specific scales). The study found that chunk types and their efficacy varied for each excerpt. Participants who marked chunks and those who did not scored similarly in intonation for Baroque/Classical excerpts. Good sight readers tended to mark macro chunks while playing Baroque/Classical style and Romantic style excerpts. Lastly, the greater number of ensembles the participants were involved in, the higher sight-reading scores they obtained. While this study limited the concept of chunking and the coding process, it introduced practical implications in categorizing different types of chunks and presented how visual chunks can be utilized to achieve sight-reading tasks.

Studies with this age group were more sophisticated in design and controlled the environment more than for studies with younger students, due to the maturity of the participants and their ability to follow instructions. Various aspects of chunking techniques have been explored in the literature with this age group, including studying the implication of visual cues

and instructions on practicing rhythmic and melodic chunks. Additionally, the studies investigated the influence of specific conditions such as the effects of chunking drills, the use of accompaniments, certain pedagogical instructions, and the influence of specific modal perception. The findings from these studies provides insight into strategies for developing chunking and music reading in general.

To teach music reading at any age group, various strategies and approaches are needed to introduce different types of musical elements and connect this knowledge into physical action. Since music reading is the initial step to understanding and producing music, it involves visual, aural, and physical processes. Some strategies are applicable to improve music reading regardless of age. First, using more than one modal stimulus comprising of multiple musical elements can aid in the reinforcement of memory (Beeler, 1995; Houghton, 2018). Second, verbal association to rhythmic and melodic chunks has a positive influence on music reading (Buonviri & Paney, 2015; Janssen, 2017). Third, music reading skills can be enhanced through continuous exposure to different rhythmic and melodic patterns (Gudmundsdottir, 2003; Reifinger, 2007; Pike & Carter, 2010). However, it is important to be aware of age and maturity limitations within each group and develop pedagogical approaches with the consideration to these limitations. For example, the size and complexity of the chunks and patterns should be modified to align with the age of the students, modifying instructions as required. Chunking techniques need to be introduced progressively to avoid hindering the advantages of these processes. When chunking was forced beyond the capability of the individual, it causes a setback and disadvantages music reading, even for adult students (Beeler, 1995).

Conclusion – Summary

When reading music, information is mainly perceived visually, and this perception is transferred physically through vocalization or playing an instrument, creating aural feedback. Even though aural stimuli and feedback are an important part of music, most previously published literature focuses mainly on the visual aspects of music reading. These studies discussed the relationship between chunking and eye movements, and the influence of visual presentation on music reading ability. A subset of studies examining eye movements observed similar behaviours presumed to be caused by chunking (Chang, 1993; Arthur, Khoo & Blom, 2016). Certain types of visual presentations and cues could trigger chunking (Fjerstad, 1968; Brodsky & Kessler, 2017). In terms of motor skills, kinesthetic chunks are the consequence of visual chunks, whereby time saved by visual chunking processes can be distributed to prepare for motor movements and increase accuracy of physical movements (Gobel, Sanchez, & Reber, 2011; Kuo, 2012).

Pitch and rhythm are key components in music literacy, and these two elements are the main criteria to evaluate music reading skills. Sight-reading and sight singing tasks are the most common evaluation methods in music literacy and these tasks evaluate the accuracy and promptness of visual perception processing. For rhythm chunks, chunking techniques can be established by using tools to regulate and guide rhythmic continuity, such as a metronome and accompaniments (Fjerstad, 1968; Beeler, 1995). Since melody is a combination of rhythm and pitch, melodic pattern training needs to include both rhythm and pitch components (Beeler, 1995). Therefore, pitch and melodic pattern training often improve overall sight-reading accuracy (Pike & Carter, 2010).

Regarding pedagogical perspectives, the studies explored the implication of chunking for different age groups. Unfortunately, many studies emphasized whether practicing patterns would have a greater impact on music reading instead of investigating the gradual processes and fine-tuning instructions to teach how to chunk notations in music reading. Therefore, studies which included practicing patterns without providing specific cues and instructions to link chunking behaviours were unsuccessful in discovering the impact of chunking (McCabe, 2004; Bluestine, 2007; Laing, 2007), while a few studies, which used specific instructions, demonstrated some advantages for chunking (Bebeau, 1982; Chivington, 1990; Pajtas, 2002; Pike & Carter, 2010; Lörch, 2021). The instruction and training of young children was designed simply, so that the students could follow tasks presented at the level of their maturity and capability to process information. However, as test results can vary based on the student's development stage it is difficult to generalize the findings. For teenagers, two relevant research studies were reviewed which presented strategies and discussed how these strategies affected participants' music reading skills. Since the participants in this age group had previous experience in music learning, the training was designed to investigate the in-depth process of music reading, such as how the application of various music reading techniques achieved the necessary tasks (Houghton, 2018). In addition, more complicated instructions and treatments could be given to examine the impact of certain pedagogical theories and approaches. For young adults and adults, especially university students, various approaches and techniques could be explored due to their maturity and ability to understand the training and evaluation process. Most of the research discussed in this review were based on this age group, investigating various aspects of chunking from a cognitive viewpoint (Pike & Carter, 2010) which included different musical elements, including

musical styles and bigger chunks of information requiring a broader theoretical understanding (Teo, 2020).

In conclusion, this literature review discussed three areas of chunking in music literacy with a focus on music reading: eye movements and visual perception in chunking, chunking of fundamental music elements, and current pedagogical approaches on chunking. This literature review elicits the need for more research on visual perceptions in chunking, strategies to build melodic chunks, and approaches to teach chunking to younger students. While beneficial, there is a lack of information regarding chunking for several reasons. First, sight-reading, the primary measurement of music reading, can be achieved over time by extensive exposures to musical scores without practicing chunking technique (Mishra, 2014). Second, chunking is a cognitive event which can be developed automatically, in addition to being trained as a part of the developmental process. Third, since no building blocks or sequential curriculum has been developed, no evidence has been found on how chunking can be taught, its impact on different stages of development, and who can benefit the most through this training. Lastly, it is more critical to evaluate chunking on an individual's skill enhancement, asking to what extent their music reading skills have improved, and their playing efficiency, how fast their reading skills have developed, instead of evaluating the advantage of chunking techniques. Therefore, the purpose of training chunking techniques is to assist in the process of establishing chunking skills and providing appropriate tools and cues.

III. Methodology

1. Selection of Method books series and Sight-reading books series

The current study investigates the chunking techniques and presentation of such techniques in beginner piano method book series and sight-reading book series. These resources introduce important music reading concepts and provide exercises and tips to improve reading skills.

The method book series analyzed in this study were selected based on two main criteria: publication date and a pedagogical approach to music reading - intervallic, multi-key or eclectic approaches. For accessibility and to compare current method book series, selections were chosen based on a publication or revision date on or after the year 2000. The publications were also selected based on their pedagogical approaches to music readings either intervallic, multi-key, or eclectic approaches that promote to recognize the music notes as a group, a sequence, or a pattern. These approaches were assessed based upon the materials' description, a description from a piano pedagogy textbook by Jacobson et al. (2016), or from reviews in the magazine, *Clavier Companion* from 2010, 2011 and 2017. In order to analyze the progressive pedagogical process, the method book series were reviewed up to level 2 (late beginner), covering the first two to three years of piano study. Based on this criteria, ten method book series were selected (Appendix A).

Sight reading book series were selected based on publication dates and a description that addressed pattern recognition as a reading strategy. Three of the seven sight-reading book series were associated with and treated as supplementary material to a method book series. In the *Piano Safari* series, the supplementary books, *Pattern Piece Levels 1* and *2* were analyzed instead of

the associated sight-reading flash cards, as *Pattern piece books* contains more relevant elements to facilitate recognizing and reading patterns (Appendix B).

2. Encoding Procedure and Analysis

2.1. Quantitative Data and Analysis

Data for the study was collected for quantitative research. The observed content, for example certain intervals, melodic patterns, and rhythmic patterns, were categorized and counted in order to convert the presented information into numeric data for quantitative analysis. To increase reliability, all selected materials were analyzed using the same criteria based on answering the following questions:

- How was chunking-related content presented?
- How many melodic and rhythmic patterns were introduced?
- How many different size chunks were represented?
 - Where melodic patterns were quantified based on the number of pitches (Table 1) and the number of notes (Table 2), and,

Melodic patterns based on pitch numbers								
Method book	Levels	Total	Single/Rep	Two	Three	Four	Five	Six+

Table 1) A category to encode the size of the melodic pattern by the number of contained pitches.

Melodic patterns based on note numbers								
Method book	Levels	Total	Two	Three	Four	Five	Six+	Flexible

Table 2) A category to encode the size of melodic patterns by the number of contained notes.

- Rhythmic patterns were quantified based on the number of rhythmic concepts (Table 3).

Rhythm patterns based on number of concepts							
Method book	Levels	Total	Single	Two	Three	Four	Five

Table 3) A category to encode the size of rhythmic patterns by the number of contained concepts.

- How often, after the initial introduction, was a pattern related concept presented?



2.1.1. Melodic Patterns

In the included method books, a melodic pattern was encoded when the group of notes meet one of the two criteria below:

- 1) When a group of notes was introduced with a label, separated from the practice piece

(Figure 1, Figure 2), OR

Warm-Ups

Position for LH:  Position for RH: 




Patterns: a.  b.  c. 

Figure 1) *Time to Begin, the Music Tree (1951/2000) series, p.9*

Workout 10 On the Move
The hand can move so the same finger can play different notes. Use this workout to prepare for the RH of *A Page or Two*.




Figure 2) *Book 1A from the Alfred's Premier Piano Course (2005) series, p.52*

- 2) When the notes were grouped by a

clear visual cue, with the

instruction to recognize them as a

group (Figure 3). The visual cue

could be a circle, bracket, or a

phrase mark. However, the group of notes by a phrase mark were only considered as

a valid pattern when the clear instruction was accompanied. For example, when a

group of notes by a phrase mark appears in the practice piece without any further

instructions to recognize them as a pattern, the group of notes was not treated as a

pattern because the long phrases could be divided multiple smaller size of patterns but

it might not be clear how to divide them, and the phrases were often not

conceptualized with labels which made difficult to recognize them in different

COME AND JOIN ME
A sequence is a melodic pattern repeated on a higher or lower tone. Find all of the sequences in this song.






Figure 3) *Grouping by a bracket, Book 1 from Music for Piano, p.14*

context even if the motions were same or similar without any specific instructions to look for them.

Melodic patterns in sight-reading materials were identified based on similar criteria noted above. However, many sight-reading books are designed to provide various reading drills and practices without introducing concepts or labeled patterns. Hence, a measure containing the same motion of notes which also appeared twice, or more was also considered to be a pattern (Figure 4).

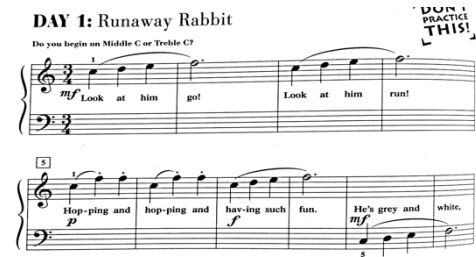


Figure 4) Repeated patterns. Level 1 from Piano Adventure: Sight-Reading (2011) series, p.46

In summary, therefore, melodic patterns were determined based on the criteria below:

- 1) When a group of notes was introduced either with a label or separated section, extracted from the practice piece, OR
- 2) When a group of notes from one or two measures appeared more than one time throughout the piece, OR
- 3) When a group of notes was grouped by visual cues such as lines, brackets, or phrase marks. Since the drill pieces in the sight-reading book series were short, usually no longer than eight measures, and repetitive, a group of notes by a phrase mark was considered as a pattern unlike the criteria of the Method book series.

The size of melodic patterns was subdivided into two categories: the number of pitches and number of notes; whereby the number of pitches included patterns containing multiple individual elements to process, while the number of notes displayed the actual size of the chunk. This subdivision was necessary to tease apart the cognitive demands of different melodic

patterns, as a pattern of different note pitches would require increased cognitive processing than a pattern of the same number of repeated notes.

2.1.2 Rhythmic Patterns

Rhythmic patterns from both method books and sight-reading materials were included in the analysis based on the following criteria:

- 1) When the rhythmic pattern was introduced separately from the practice piece, OR
- 2) When the rhythmic pattern from one or two measures were repeated within the piece multiple times, OR
- 3) When the rhythmic pattern was indicated by specific visual cues, such as brackets, phrase marks, *etc.*

The size of the rhythmic pattern was analyzed based on the number of different rhythmic concepts contained in a pattern, as patterns with a larger number of rhythmic values would require increased cognitive processing than patterns with fewer rhythmic concepts. For example, when a pattern with a series of quarter notes, the size of the pattern would be one since the pattern was consisted of single rhythmic concept. However, the pattern with two quarter notes, two eighth notes, and a quarter rest would be determined as three in size since the pattern was consisted of three different rhythmic concepts.

2.1.3. Frequency of pattern reinforcement

To address the frequency of pattern reinforcement, the data was analyzed through two phases. The first phase examined how many patterns introduced at one level were reintroduced at the subsequent level. Both melodic and rhythmic patterns were included in this phase. During the

second phase, pattern reinforcement was analyzed based on the instructions that ask learners to identify or recognize a labelled pattern, such as “Find 2nds” or “Circle 3rds” within each level. As rhythmic patterns were generally introduced without specific labeling, and as sight-reading materials were designed as reading drill practice instead of introducing new types of patterns, the data analysis for the second phase focused on melodic patterns from the method book series.

2.2. Qualitative Analysis on chunking related instructions or visual cues

As terminology and teaching styles, including the use of visual cues, varied between resources, qualitative analysis was required to analyze how the included material developed chunking techniques. This required an in-depth examination of the materials’ contents. Instead of identifying absolute literal terms, the definitions of concepts were determined based on context. In addition, the use of pictures, symbols, markings, and verbal descriptions demarcating chunking were analyzed. The qualitative analysis focused on answering the following questions:

- What instructions were used to lead and build visual chunking techniques, and how clear were the instructions for visual chunking?
- How was a visual cue connected to physical response? What types of visual cues were presented in connection with physical response?

3. Limitations

Since the resource analyzed in the study were non-randomly selected by publication dates, and reviews from a pedagogy textbook, magazine, or publication description, some resource without any reviews were eliminated due to lack of information about their pedagogical approaches. Furthermore, the current study did not examine technique books with pattern-based

approaches. The main purpose of technique books is to develop physicality in piano playing rather than building music reading skills, hence they were not included.

In addition, the researcher acknowledges that the instruction of chunking is not solely reliant upon method book series and sight-reading book series, as the individual teaching style of individual teachers also plays a role in building chunking strategies. However, this study strictly focuses on collecting data from beginner teaching materials, and analyzing individual teachers and their teaching style is not within the scope of this research project. Therefore, the pedagogical approaches and deliberate instructions will be analyzed strictly based on the information presented in the teaching materials.

IV. Data Analysis

1. Quantitative Analysis

The primer level to the late beginner level books from ten method book series, for a total of 38 books, are examined and the data organized based on the year of publication. In addition, the study investigates six sets of sight-reading books, including two sets of supplementary books associated with the examined method book series, and a set of pattern piece books, supplementary to the Piano Safari series, for a total of 20 sight-reading books. The data from the sight-reading books are presented by the order of publication year.

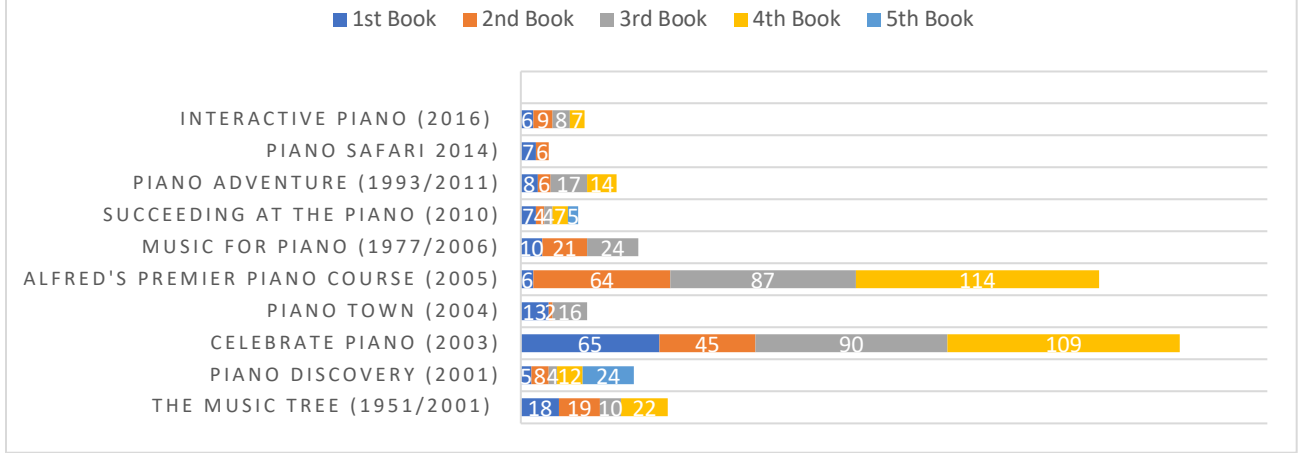
1.1. Melodic Patterns

The type and number of melodic patterns contained in each resource is analyzed. Melodic patterns are subdivided into two categories: number of pitches and number of notes, with each pattern evaluated based on its size.

1.1.1. Method book series

Graph 1 displays the total number of melodic patterns introduced or indicated in each method series. The different colours represent a level in the book series, and the length of each bar section indicates the number of melodic patterns identified in each book.

TOTAL NUMBER OF MELODIC PATTERNS IN METHOD BOOK SERIES

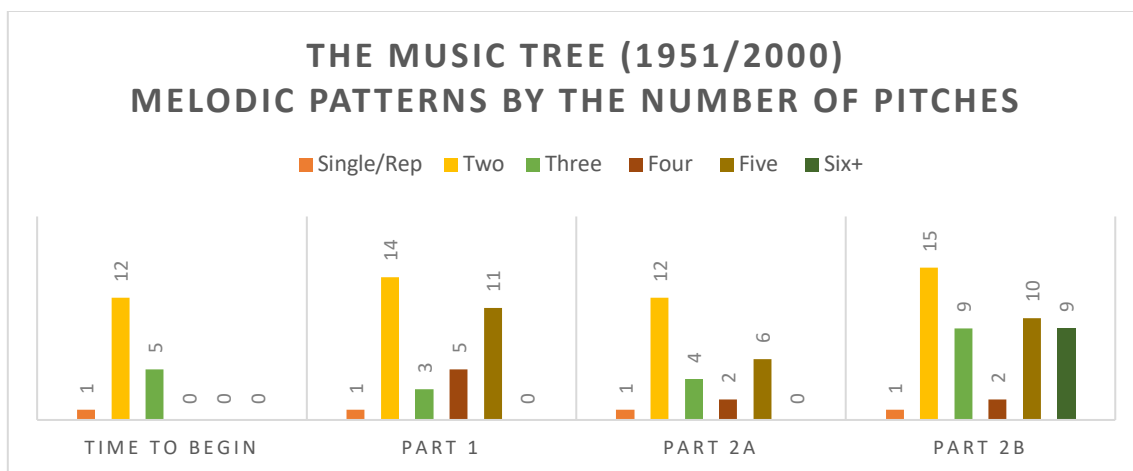


Graph 1) Total Number of melodic patterns in method book series

To investigate the details of the introduced melodic patterns, each individual method book series is discussed in depth. The data for each individual book includes all patterns observed in that book, including patterns from previous levels, based on the assumption that the previously introduced patterns will be recognized when it appears again, this also demonstrates the reinforcement of melodic patterns as the levels progress.

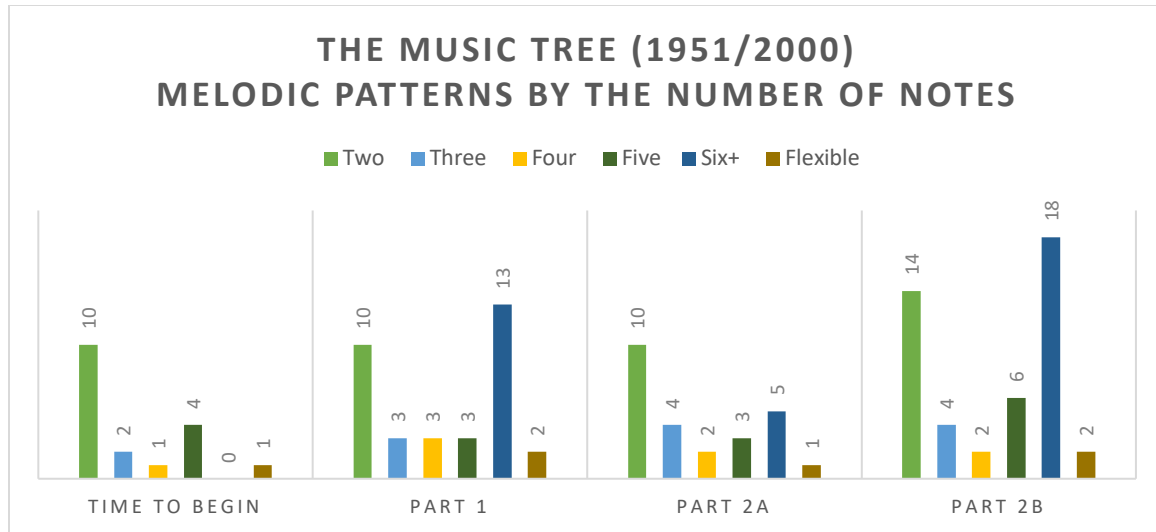
A. The Music Tree (1951/2000): Time to begin, Part 1, Part 2A, and Part 2B.

The Music Tree series introduces a total of 69 melodic patterns excluding any duplicated patterns from each level.



Graph 2) The number of melodic patterns by the number of pitches, *The Music Tree (1951/2000) series*

Of the melodic patterns introduced in each book, patterns with two pitches are the most common, followed by patterns with five pitches. Since *the Music Tree* series is based upon the intervallic approach, groups of two pitches, indicated by the interval, is the most observed melodic pattern. The first book of the series, *Time to Begin*, introduces a group of repeated notes, consisting of a single note (Single/Rep), 12 patterns with two pitches, and five types of three-pitch patterns. The *Part 1* book introduces the technique of fingering patterns with all five fingers, which is associated with the increase of melodic patterns of five pitches. The *Part 2* books build on these five pitch melodic patterns by introducing five-finger scales and related patterns in different keys. However, patterns with three- or four-pitch groups are less common than two-pitch or five-pitch groups. The three-pitch melodic patterns increase with the introduction of more elaborate finger exercise patterns and triads, whereby triad related patterns are introduced in *Part 2A* and reinforced in *Part 2B*.

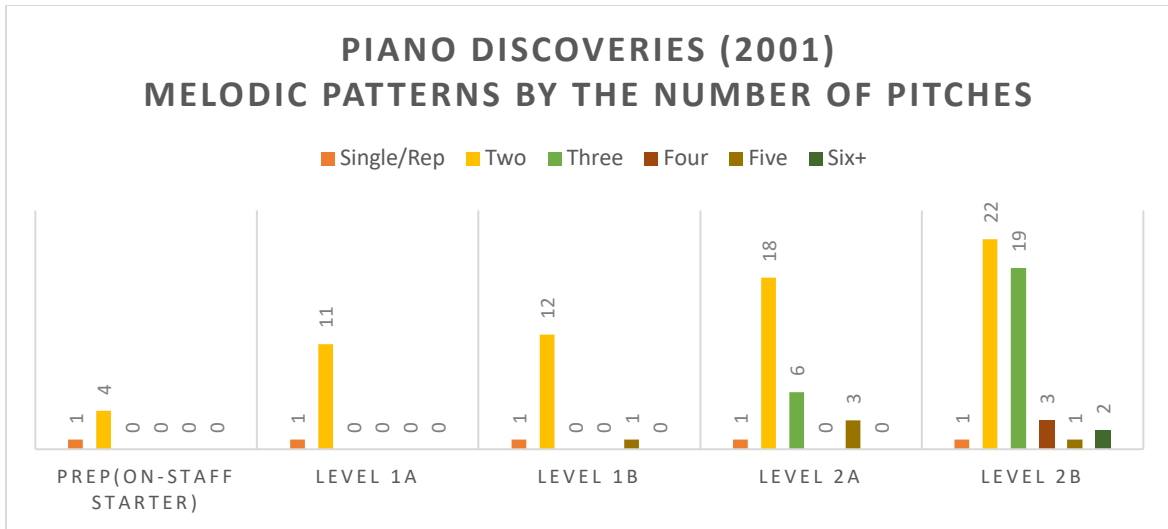


Graph 3) The number of melodic patterns by the number of notes, The Music Tree (1951/2000) series

While the number of pitches is associated the conceptual size of the melodic pattern, the number of notes displays the actual size of the melodic pattern. Any patterns containing repeated notes are categorized as “Flexible”, since the number of notes can be expanded or reduced depending on the number of note repetitions. As observed with the number of pitches, the combination of two-note groups is the most observed melodic pattern. The number of the six+ groups increase in *Part 1*, because the warm-up introduces various patterns using fingering which consists of a few pitches but are easily expanded with various combinations of pitches. This series also displays few appearances of three, four, and five note group patterns.

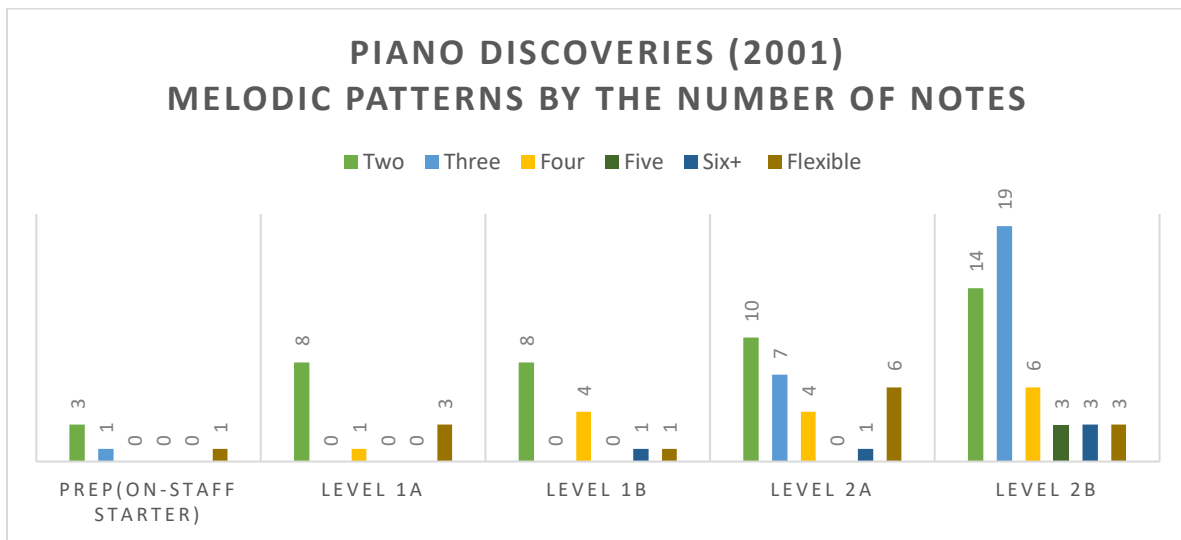
B. Piano Discoveries (2001): On-Staff starter, Level 1A, Level 1B, Level 2A, Level 2B

A total of 53 melodic patterns are introduced throughout the *Piano Discoveries* Series (On-Staff Starter to Level 2B), which exclude duplicated melodic patterns building on each level.



Graph 4) The number of melodic patterns by the number of pitches, Piano Discoveries (2001) series

Up to *level 1B*, the series maintains the use of melodic patterns with two-pitch groups, with patterns combining more pitches gradually appearing in increasing book levels. The number of patterns with three-pitches increases as the series introduces blocked and broken triads with variations, such as inversions and the Waltz pattern. Patterns with the combination of five or more pitches appear after the introduction of five-finger positions and major scales.

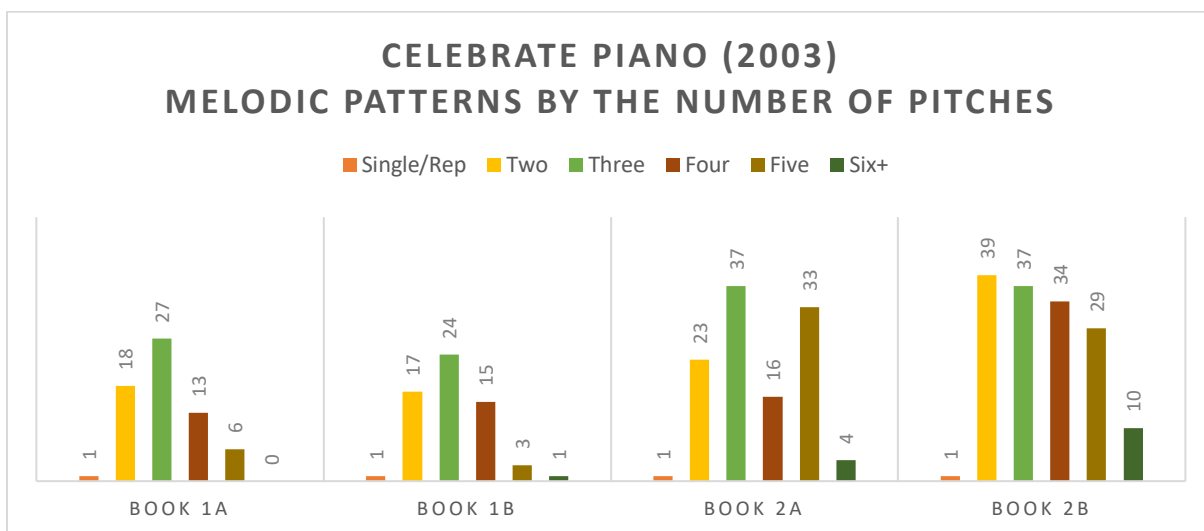


Graph 5) The number of melodic patterns by the number of notes, Piano Discoveries (2001) series

The most common melodic patterns are composed of two notes. However, patterns with three note groups appear in the *Level 1A* book and increased greatly in *Level 2A* and *Level 2B*. The increase of three note groups is due to the introduction of chords and triads in *Level 2* while the few patterns with three notes or four notes in the previous level are elaborated patterns with two pitches.

C. *Celebrate Piano (2003): Book 1A, Book 1B, Book 2A, Book 2B.*

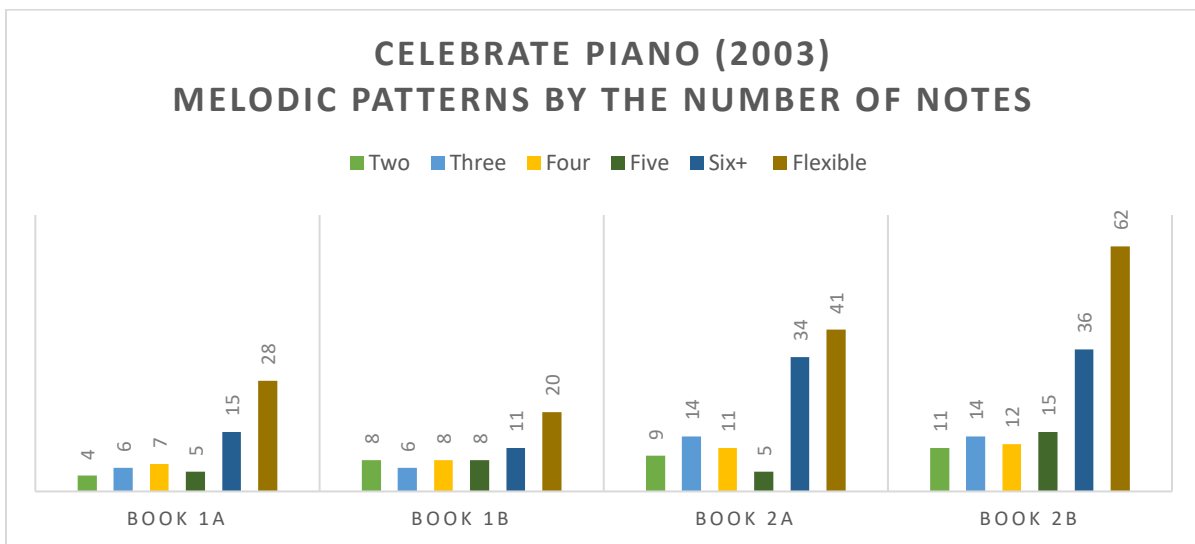
The *Celebrate Piano* series introduces the greatest number of patterns, a total of 309 melodic patterns, and the patterns are consisted of various combinations of three or four pitches.



Graph 6) The number of melodic patterns by the number of pitches, *Celebrate Piano (2003)* series.

Unlike the previous two series, which have the greatest number of patterns with two pitches, the *Celebrate Piano* series has the greatest number of melodic patterns with three pitches up to *Book 2A*. Since the *Celebrate Piano* series introduces the concept of phrase and phrase marks in the middle of *Book 1A*, many melodic patterns are distinguishable based on phrase marking (*Book 1A*, p.34), which group more than two pitches or two notes. These patterns, marked by phrase marking, are accompanied with instructions, such as “P = Phrases and

patterns, how many phrases are there?” (Book 1A, p.49) or “Find and circle the repeated pattern in the LH” (Book 1A, p.44). Therefore, melodic patterns grouped by a phrase mark in this series are considered as a pattern, while a group of notes under a phrase mark in other method book series are not considered to be a pattern due to lack of emphasis and instruction. Additionally, every unit within each level contains review activities introducing short melodic patterns consisting of three or four pitches.



Graph 7) The number of melodic patterns by the number of notes, Celebrate Piano (2003) series.

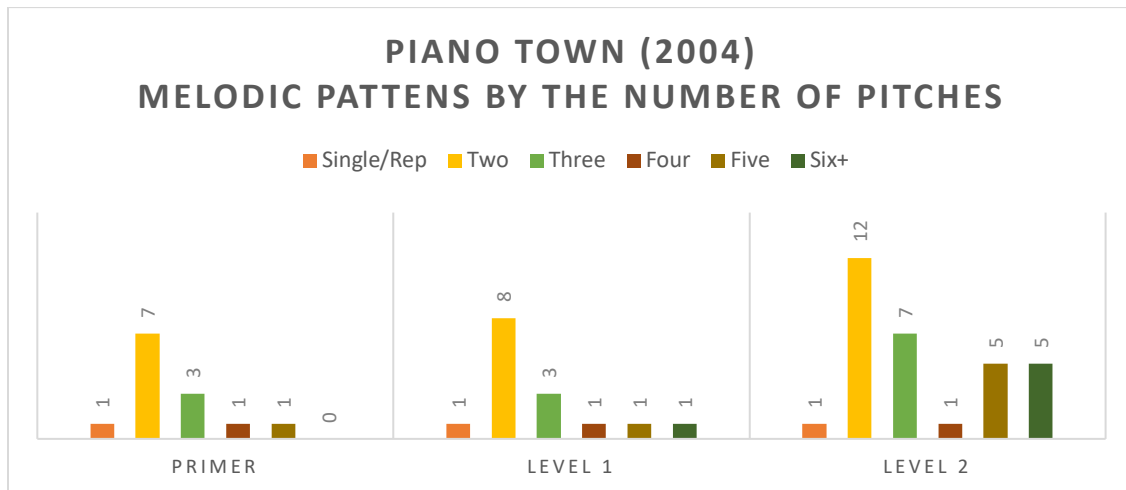
Interestingly, the *Celebrate Piano* series presents a large number of flexible patterns (over 30% of the total patterns were defined as flexible¹) which contain repeated pitches expanding or contracting the number of notes within the pattern. In addition, this series includes many longer melodic patterns containing more than six notes, due to the grouping of notes into a pattern by a phrase mark.

¹ Book 1A - 43%, Book 1B – 32%; Book 2A – 35%; Book 2B – 41%

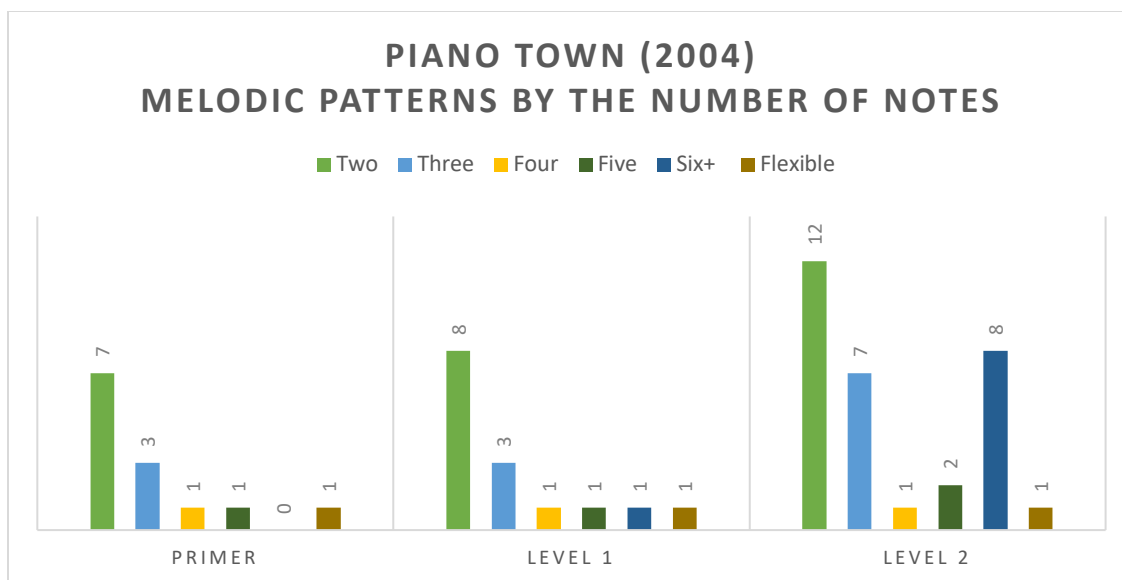
D. *Piano Town (2004): Primer, Level 1, Level 2*

The *Piano Town* series introduces 31 melodic patterns throughout the series. As the series is based on a gradual multi-key approach (Jacobson, 2016), melodic patterns with two pitches and two note combinations are the most common melodic pattern sizes. This series introduces blocked and broken triads, and five-note scales at the primer level. These melodic patterns are reinforced in *Level 1* and *Level 2* and expanded as longer patterns, with more notes and pitches. The *Level 2* book contains harmonic chord progressions which are included as melodic patterns with more than six pitches.

The number of two-note patterns are the same as the number of two-pitch patterns since the two-note groups are introduced as different intervals with the melodic forms and harmonic forms. The number of three-note patterns are also identical to the number of three-pitch patterns since most of the three-note patterns are triads with three pitches.



Graph 8) *The number of melodic patterns by the number of pitches, Piano Town (2004) series*

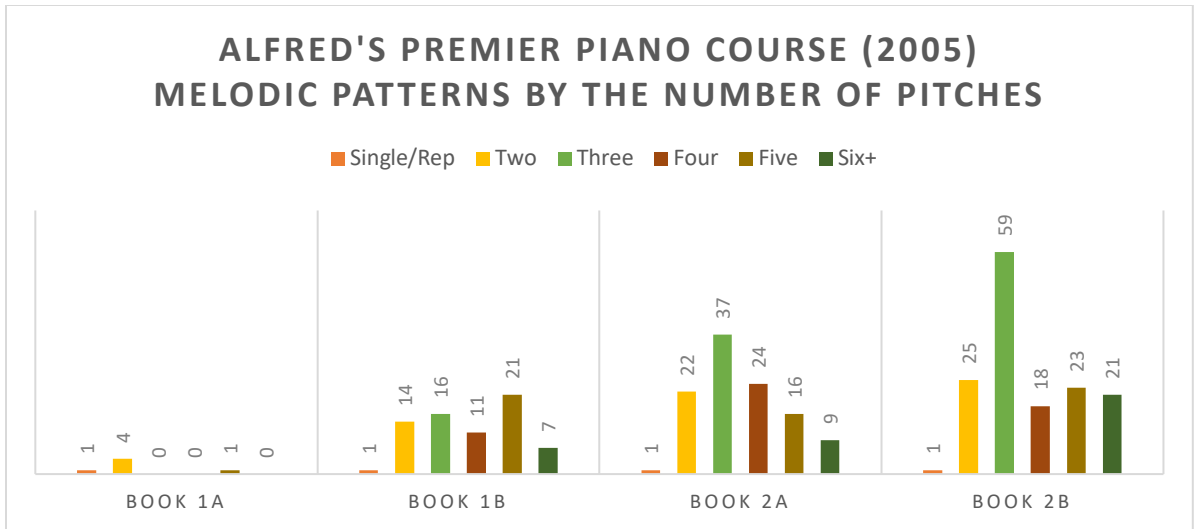


Graph 9) The number of melodic patterns by the number of notes, Piano Town (2004) series

However, the number of larger patterns with more than six notes are different than the number of patterns with more than six pitches, because the harmonic progress with two chords consists of four or five pitches played with more than six notes. For example, a harmonic progression, I – V7 (with 2 notes) – I in C major, consists of four pitches (C, E, F, G) and eight notes (C, E, G/ F, G/ C, E, G). Overall, the Piano Town series introduces patterns mostly based on intervals, chords, and scales.

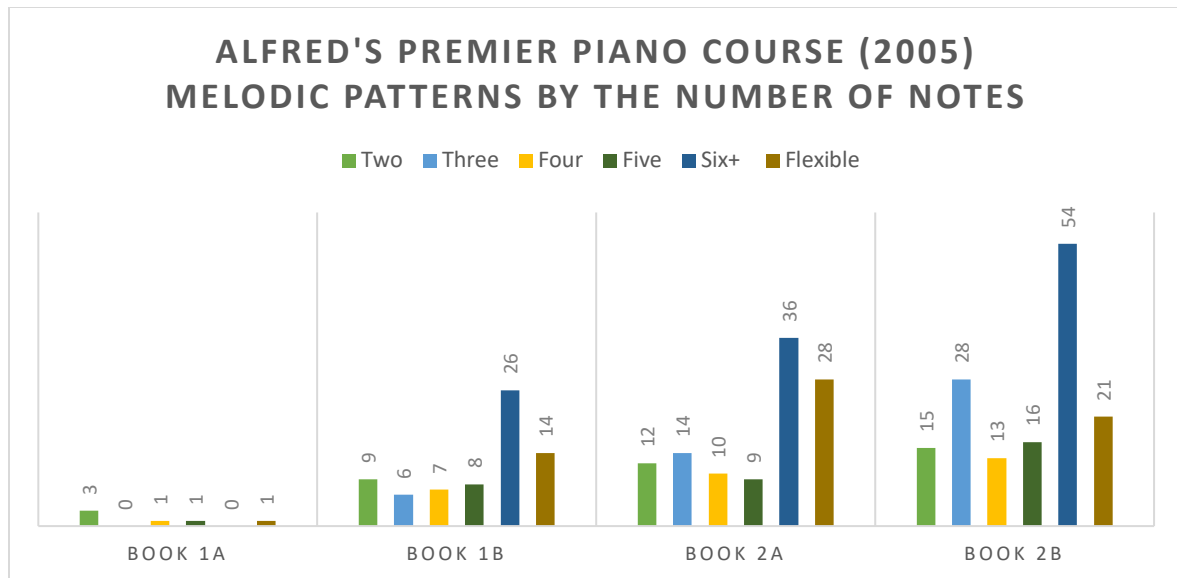
E. Alfred's Premier Piano Course (2005): Book 1A Lesson, Book 1B Lesson, Book 2A Lesson, Book 2B Lesson

The *Alfred's Premier Piano Course* series contains 271 melodic patterns, which is the second largest number of patterns among the method book series.



Graph 10) The number of melodic patterns by the number of pitches, Alfred's Premier Piano Course (2005) Series

Six melodic patterns - one single-pitch (repeated notes), four two-pitches, and one five-pitch pattern - are introduced in the first book of the series. However, more balanced sizes of melodic patterns with various numbers of pitch groups appear starting in *Book 1B*. Interestingly, the melodic patterns with three pitches are the most common patterns addressed in *Book 2B*. Many patterns in this series are introduced as a part of a technique preview or sight-reading activities, whereby these activities consisted of three or four pitches, such as broken chords, a series of consecutive pitches, or a mixture of stepping or skipping motions with three pitches. Therefore, this series provides increased exposure to various types of patterns, separate from practice pieces.



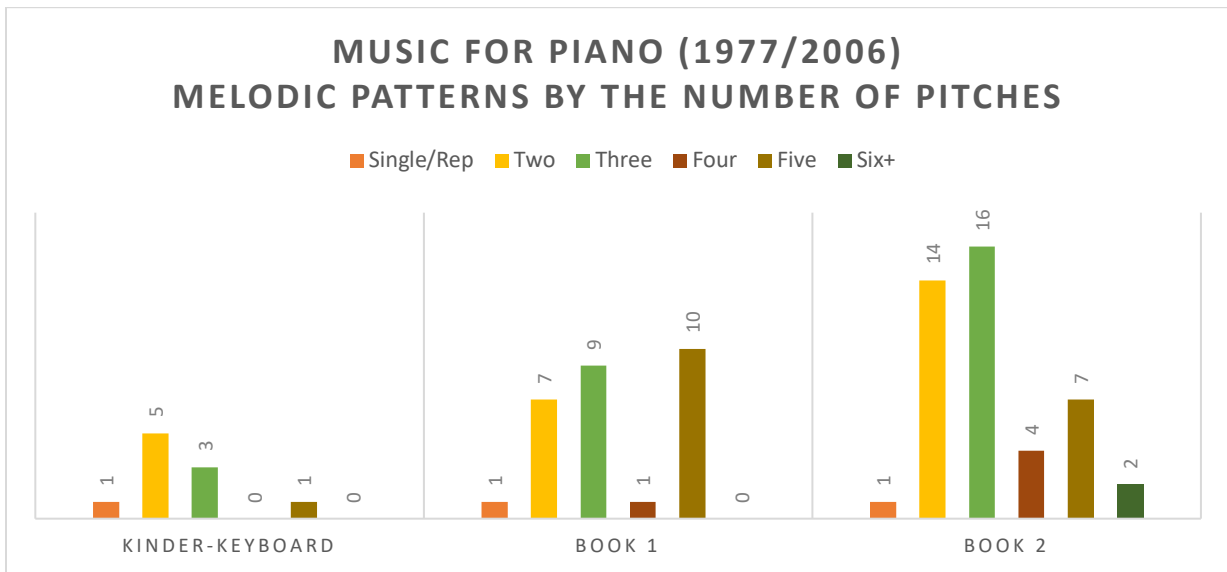
Graph 11) The number of melodic Patterns by the number of notes, Alfred's Premier Piano Course (2005) series

Within Alfred's Premier Piano Course, the patterns with more than six notes are the most apparent. The main reason for the dramatic increase in the number of larger patterns starting in *Book 1B* is because of the appearance of elaborate patterns with a small number of pitches. Another reason for this increase is due to the introduction of various pattern possibilities within five-finger positions and the different harmonic chord forms and progresses, using primary chords in multiple keys. The elaborate five-finger patterns can be any melodic patterns within the five-finger position without moving the location of hands. These patterns utilize five pitches or less but expanded the number of notes with various combinations of intervals and motions. In addition, many patterns between *Book 1B* and *Book 2B* contain repeated notes within the group, increasing the number of the flexible size patterns.

F. *Music for Piano (1977/2006): Kinder-Keyboard, Book 1, Book 2*

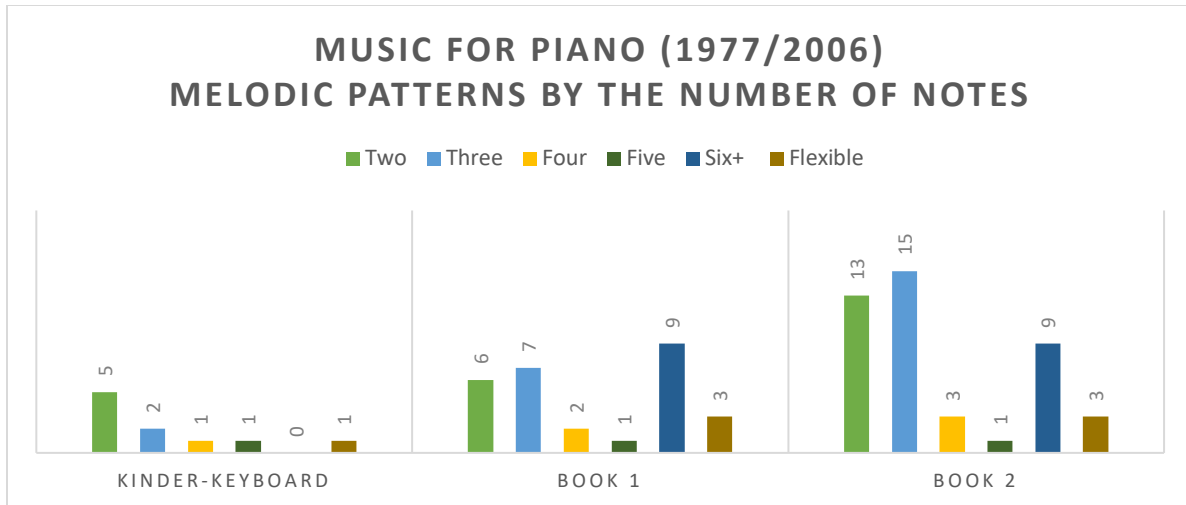
The *Music for Piano* series introduces a total number of 55 melodic patterns. The first book, *Kinder-Keyboard*, introduces mainly patterns with two pitches, including intervals up to

5th and five-finger scales in multiple keys. However, melodic patterns with five pitches appear with the greatest frequency in *Book 1*, and patterns with three pitches appear the most in *Book 2*.



Graph 12) The number of melodic patterns by the number of pitches, *Music for Piano (1977/2006) series*

This is because *Book 1* introduces various patterns with the pitches from five-finger scales in different keys. In addition, *Book 1* introduces triads and melodic patterns with chord pitches, as seen in Alberti Bass, increasing the number of three-pitch patterns. In *Book 2*, the series explores the different types of triads, including major, minor, and diminished, their various forms, such as blocked, broken, and various accompaniment ostinato patterns. Also, patterns with more than six pitches appear in *Book 2*, as the level introduces full scales with eight pitches, other types of scales like Blues scales, and chord progressions with three chords.

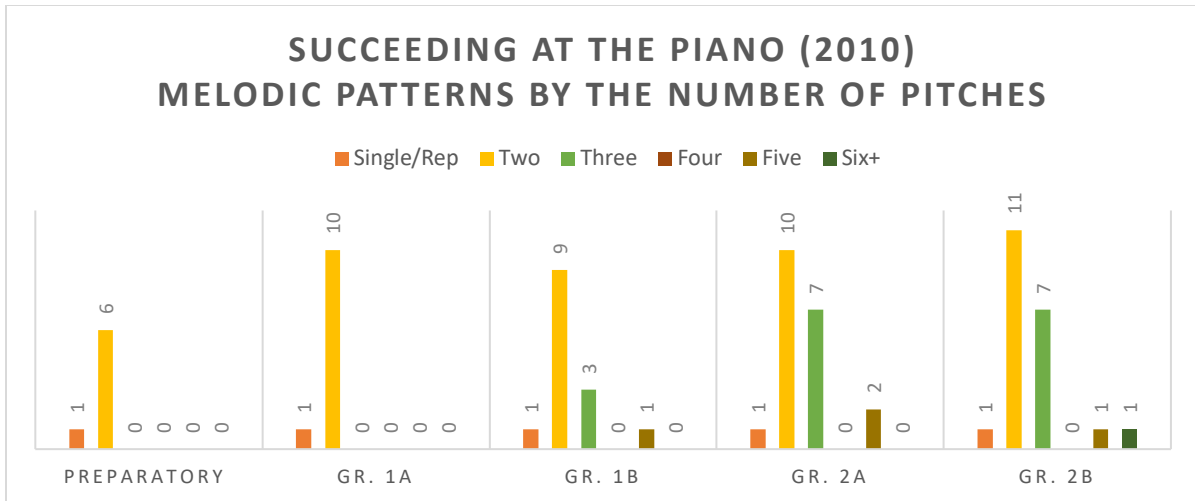


Graph 13) The number of melodic patterns by the number of notes, Music for Piano (1977/2006) series

The introduction of elaborated five-finger patterns and variants in *Book 1* contributes the increase of pattern with more than six notes (see Graph 13). The increased number of patterns with three notes is due to the introduction of various triads, which coincides with the increased number of patterns with three pitches, even though the number of patterns is not exactly same.

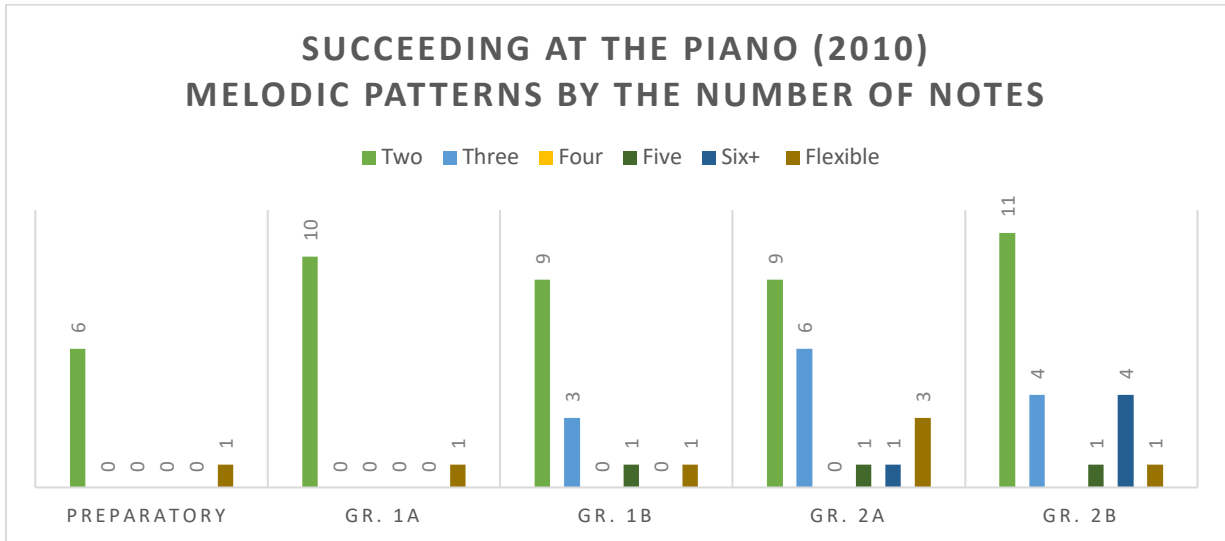
G. Succeeding at the Piano (2010): Preparatory, Grade 1A, Grade 1B, Grade 2A, Grade 2B

The *Succeeding at the Piano* series introduces 27 melodic patterns across five levels, where most of the melodic patterns are built upon in proceeding levels.



Graph 14) The number of melodic patterns by the number of pitches, Succeeding at the Piano (2010) series.

In the first two books of the series, a single pitch pattern (repeat) and patterns with two pitches based on intervals are introduced. The emphasis of the patterns with two pitches continues throughout the series, with three- and five- pitch patterns appearing as the series introduces triads, arpeggios, and five-finger scales.



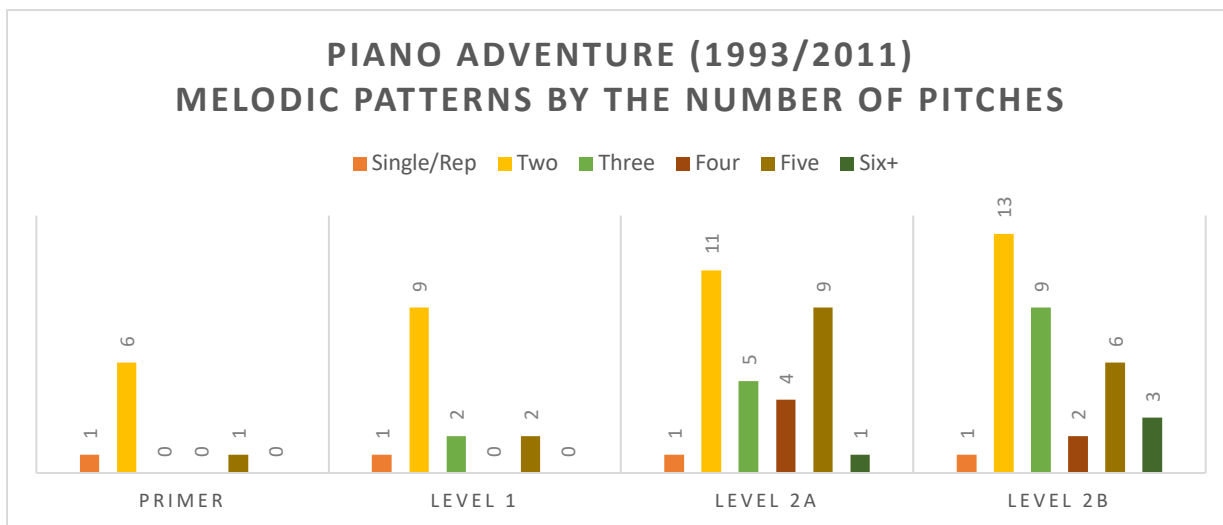
Graph 15) The number of melodic patterns by the number of notes, Succeeding at the piano (2010) series

As observed to the number of patterns with different pitches, within this series two-note patterns are the most common melodic pattern, with variable numbers of five-, or six or more-pitch patterns associated with the introduction of elaborate patterns of five pitches and

accompanying ostinatos with two or three pitches, such as the Waltz Bass patterns in I or V7 chords. Overall, this series provides a consistent reminder of intervals, chords, and scales and introduces different styles of accompaniment patterns based on the chord progressions. Although this series introduces the concept of a phrase in *Grade 1A*, phrases are not included as a melodic pattern due to lack of specific instructions for recognizing as a phrase, the present of multiple smaller patterns within an extended phrase length, and due to the difficulty in conceptualizing as proper labels were missing from the phrase markings.

H. Piano Adventure (1993/2011): Primer, Level 1, Level 2A, Level 2B

The *Piano Adventure* series introduces a total of 45 melodic patterns from *Primer* level to *Level 2B*. Since intervals, formed with two pitches, are reinforced, and expanded upon in each level, with both melodic and harmonic forms, melodic patterns with two pitches are the most common patterns observed in the series.





Graph 16) The number of melodic patterns by the number of pitches, *Piano Adventure (1993/2011) series*

The *Primer* level introduces a single note repetition, a few intervals, and a five-finger scale. Intervals are given proper names in *Level 1*, while the *Primer* level refers them as steps

and skips. The number of patterns with three pitches and five pitches increases due to the introduction of five-finger scales, and triads in both blocked and broken forms. *Level 2A* contains various forms of five-pitch patterns and *Level 2B* includes full scales.

A relatively high number of patterns with five or six+ notes are present in this series, though two-note patterns dominate; this is due to the instructions on recognizing the pattern in practice pieces (Figure 5), the use of warm-up patterns (Figure 6), introducing patterns with a greater number of pitches, and phrase marks with specific indications. *Level 2A* indicates some patterns using descriptions to verbalize the patterns (Figure 7), contributing to the expansion of pattern sizes, even with a few notes. In this case, a group of notes with the phrase mark is considered to be a pattern since it is accompanied by specific written instructions. Additionally, the introduction of the Waltz pattern with different chords and arpeggios increases the number of notes creating each pattern.

DISCOVERY  Where are the first 2 measures found later in the piece? Circle them. 

Teacher Duet: (Student plays 1 octave higher)

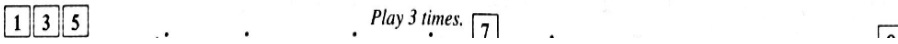
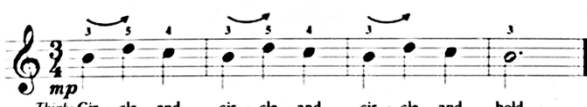
 Play 3 times. [7]

Figure 5) an Instruction to find patterns, Level 1 from *Piano Adventure* (2011) series, p. 44

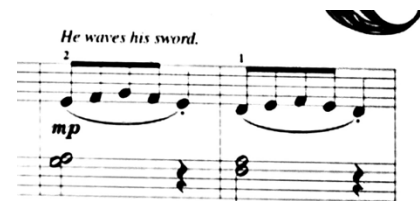
Warm-up

- On the closed keyboard lid, play this R.H. finger pattern:
3 - 5 - 4 | 3 - 5 - 4 | 3 - 5 - 4 | 3
- Optional: Explore gentle wrist circles as you play on the keys.
(Circle down and out as you play from fingers 3 to 5, rising up and around to complete the circle. Teacher demonstrates.)



Think. Cir - cle and cir - cle and cir - cle and hold.

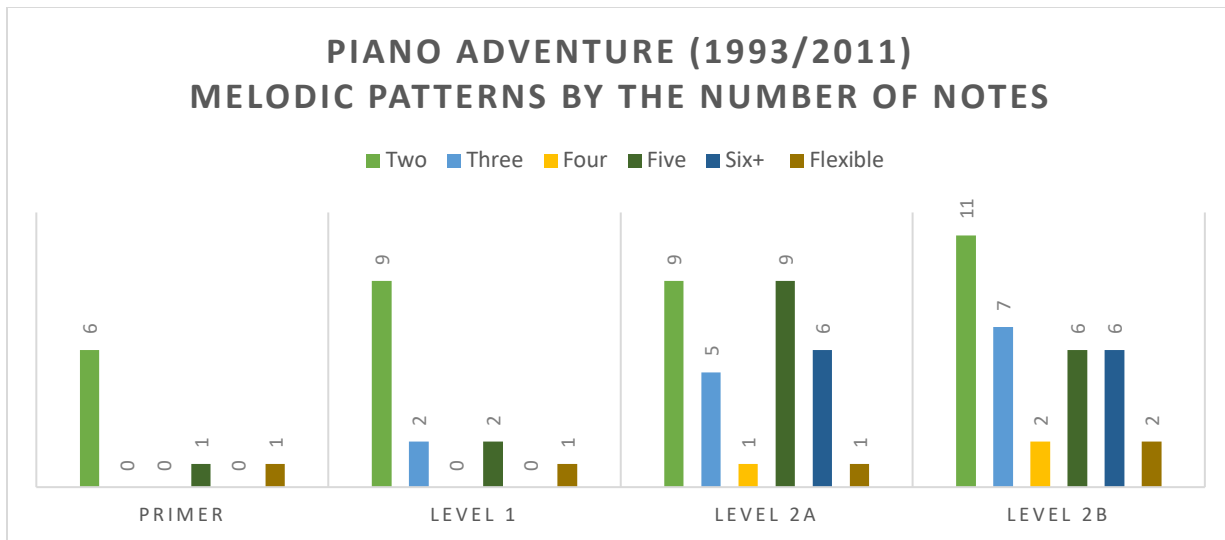
Figure 6) Warm-up, Level 2A from *Piano Adventure* (2011) series, p.20



He waves his sword.

mp

Figure 7) Description for a pattern, Level 2A from *Piano Adventure* (2011), p.50

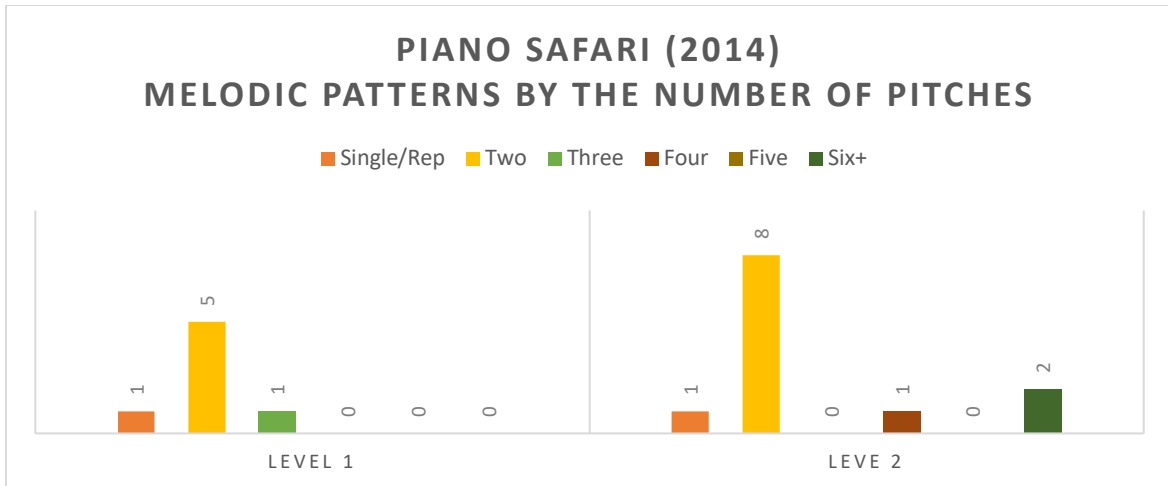


Graph 17) The number of melodic patterns by the number of notes, Piano Adventure (1993/ 2011) series

Although sizes of both pitch and note patterns become more balanced as levels build upon each other, due to the appearance of warm-up patterns, groups of two notes and two pitches are the most prevalent patterns, and pattern size quickly jumps into larger size patterns instead of gradually increasing.

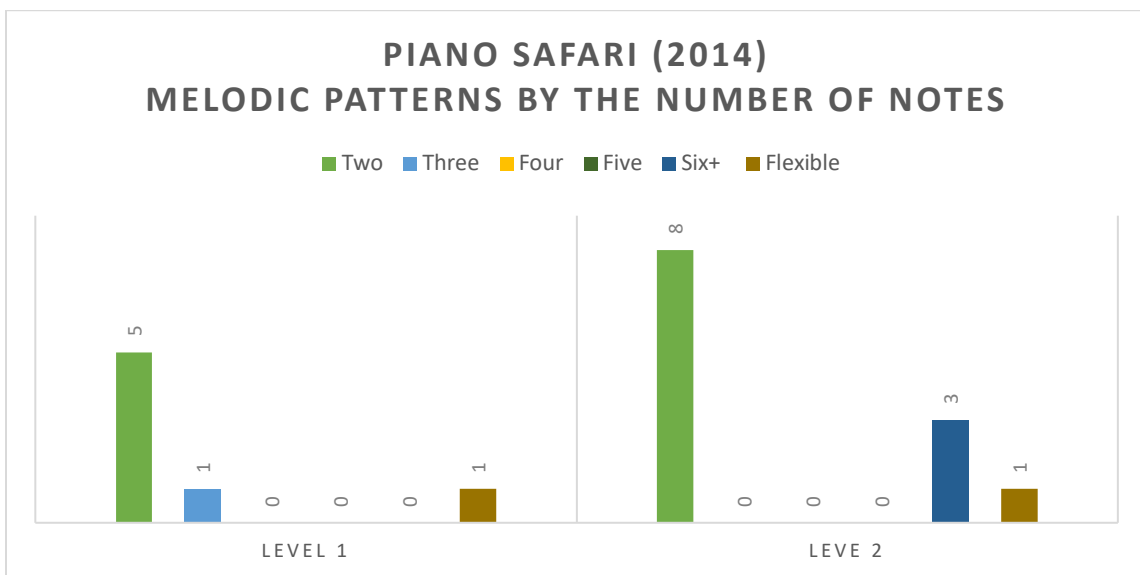
I. Piano Safari (2014): Level 1 Repertoire, Level 2 Repertoire

The *Piano Safari* series contains the least number of melodic patterns, a total of 13 patterns, among the ten analyzed method book series. Two-pitch pattern based on intervals were introduced in *Level 1*, which continues to *Level 2*, whereby pattern include intervals in their melodic and harmonic formats.



Graph 18) The number of melodic patterns by the number of pitches, Piano Safari (2014) series

This series also keeps patterns small regarding the number of notes in each pattern, with two-note patterns being the most common. However, the practice pieces within *Piano Safari* are composed in such a way as to encourage consistent review of two-note intervals in many different formats. Therefore, even though the number of pattern types and the size of the patterns are small and unvaried, they appear frequently throughout the series.



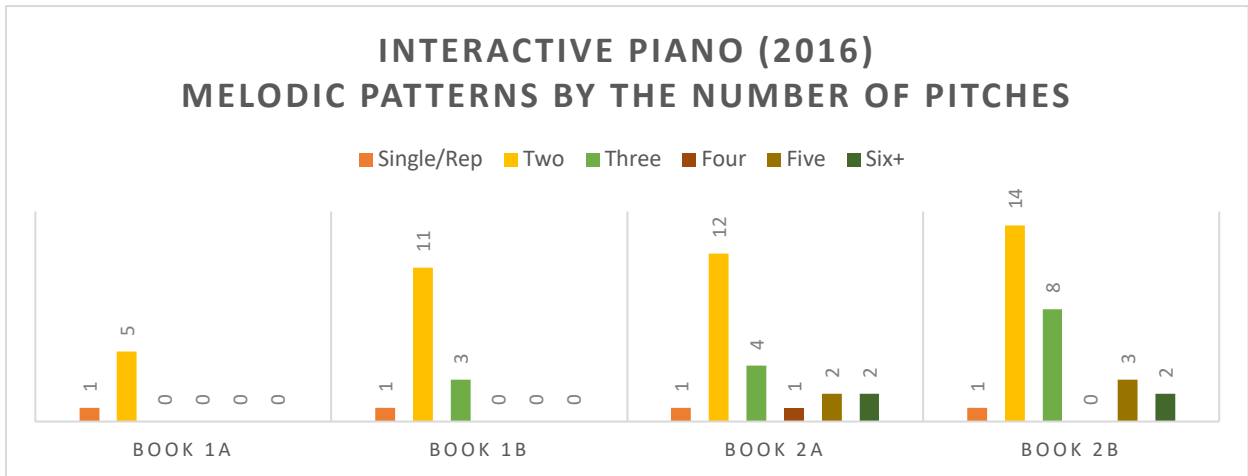
Graph 19) The number of melodic patterns by the number of notes, Piano Safari (2014) series

While the series introduces the concept of slurs and phrase marks in *Level 1*, instruction and the process of conceptualization is absent. The phrase marks often appear within the practice

piece for technique development; however, these phrase marks are not directly connected to reading as a group. Therefore, marked phrases in this series are not considered to be a pattern. Moreover, the clearly stated purpose of *Level 2* in this series is to teach intervallic reading from 2nds to 5ths (Level 2, p.7), which coincides with how patterns are presented in the series.

J. Interactive Piano (2016): Book 1A, Book 1B, Book 2A, Book 2B

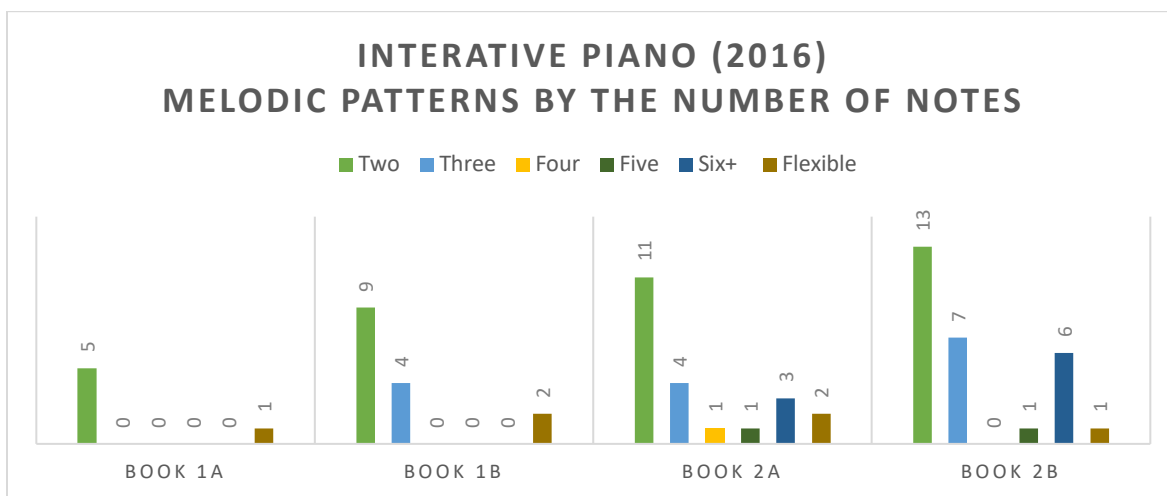
The *Interactive Piano* series introduces a total of 30 unique melodic patterns over four levels, excluding duplicated concepts from previous levels. Similar to previously discussed method book series, this series introduces melodic patterns based on intervals, chords, and five-finger scales, with two-pitch patterns based on interval relationships being the most common. In *Book 1B*, three-pitch, five-pitch and six+-pitch patterns reflect the introduction of chords, five-finger scales and a full major scale. Arpeggios, different chord inversions, and the introduction of the Waltz pattern coincide with an increase of three-pitch patterns in *Book 2B*.



Graph 20) The number of melodic patterns by the number of pitches, *Interactive Piano (2016)* series

Most patterns in this series are composed of two notes, coinciding with the presence of two-pitch patterns. However, the number of six or more-note patterns is greater than patterns

with more than six pitches. This is due to the introduction of elaborate patterns with few pitches and chord progressions, which contains more notes but repeat the same pitches.



Graph 21) The number of melodic patterns by the number of notes, Interactive Piano (2016) series

In summary, this section investigates the number of unique melodic patterns introduced in each method book series and analyzes the patterns by number of pitches and number of notes. Seven out of the ten method series introduce intervals, melodic patterns with two pitches and two notes, as the most common pattern, where the number of pitches increases upon the introduction of chords and scales. In book series which introduce only a small number of melodic patterns based on the concepts of intervals, scales, and chords, (e.g., *Piano Discoveries*, *Succeeding at the Piano*, *Piano Safari*), the practice pieces include the introduced melodic patterns multiple times aiding in the recognition of the pattern, even if no specific instructions are provided. Although these series introduce only a small number of smaller sizes of melodic patterns throughout the book levels, this provides solid reinforcement to assist in remembering and recognizing the patterns.

On the other hands, some method series, such as the *Celebrate Piano*, *Alfred's Premier Piano Course*, and *Music for Piano* series, extract bigger size patterns including mid-length

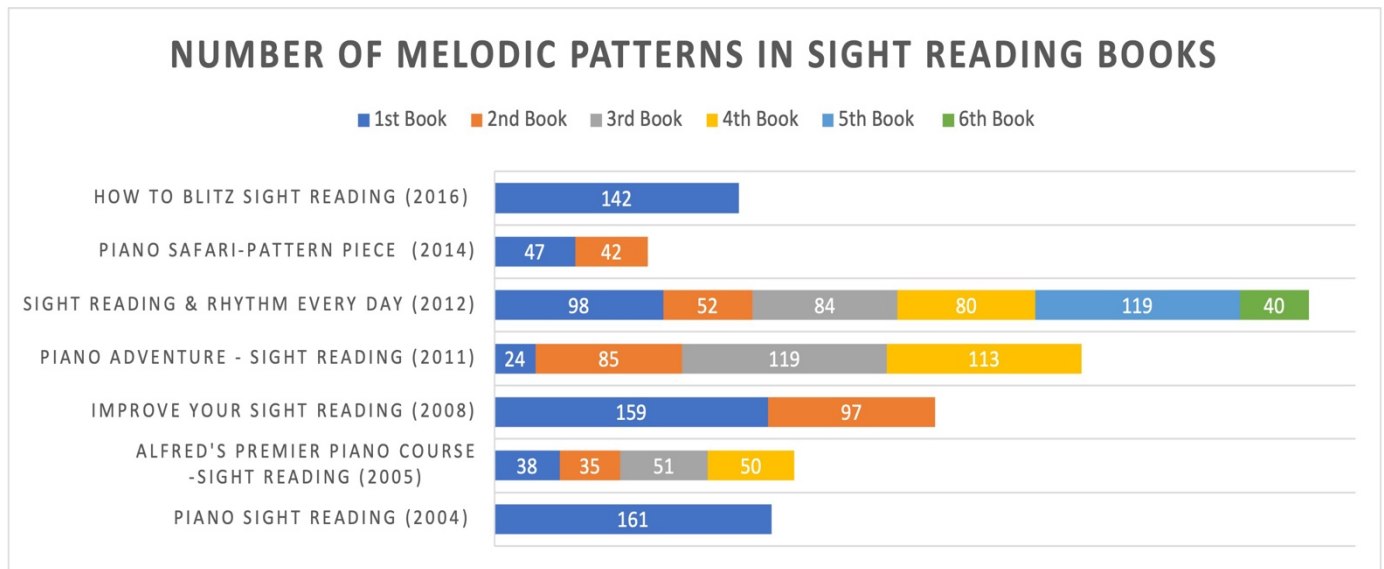
patterns, combinations of three or four pitches in three or four notes. Those series introduce bigger size patterns separately from the practice pieces, which increase the number of melodic patterns greatly and provides the exposures on various patterns. Introducing patterns beyond interval or scale recognition focuses the students' attention to reading the pattern as a group, increasing the scope of grouping with a more balanced and gradual process at each level.

However, many of the patterns in these three series are presented without any definitions, terms, or names, and are formed a longer phrase with the larger numbers of notes, which may decrease memory recall and makes it more difficult to refer to the patterns in future contexts.

Overall, many of the method book series introduce a limited number of mid-size patterns, such as patterns with three or four pitches and with three or four notes and include insufficient labelling of non-chord or non-consecutive scale related melodic patterns. This is similar to teaching letters (individual notes, or patterns with two notes), and sentences (keys, scales, and longer phrases), but failing to teach word recognition (groupings of three- or four- pitches or note figures).

1.1.2. Sight-reading book series

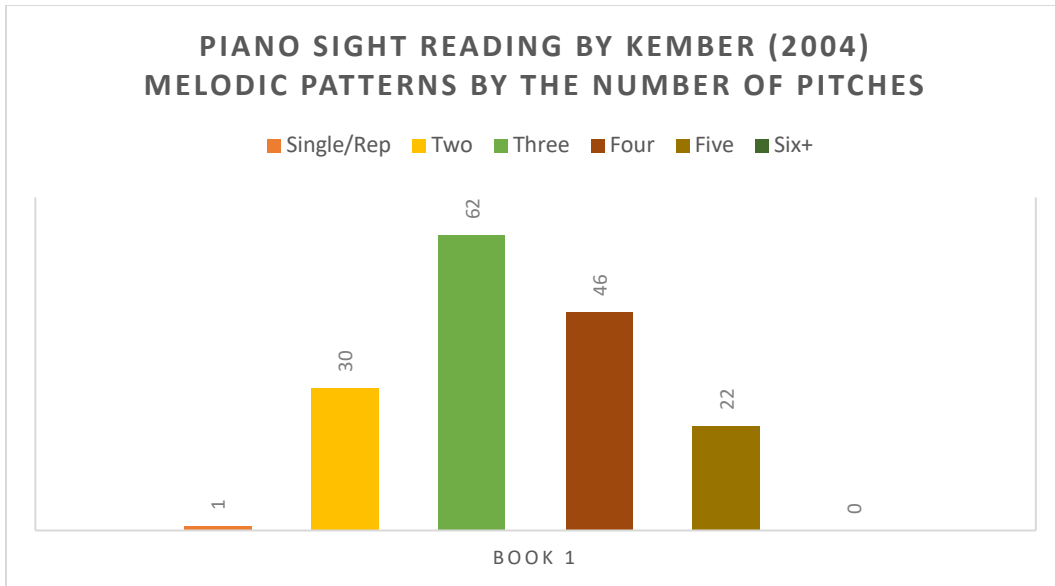
The number of patterns introduced in sight reading book series are much larger than the patterns in method book series because sight-reading books are designed to expose students to various forms of patterns and passages with the purpose of building reading expertise. Unlike method book series, groups of notes with phrase marks or repeated within a passage are considered as a pattern as sight-reading book series often introduce patterns using drills and short passages with limited definitions of concepts or terms, if present at all.



Graph 22) Total number of melodic patterns in the selected Sight-Reading book series

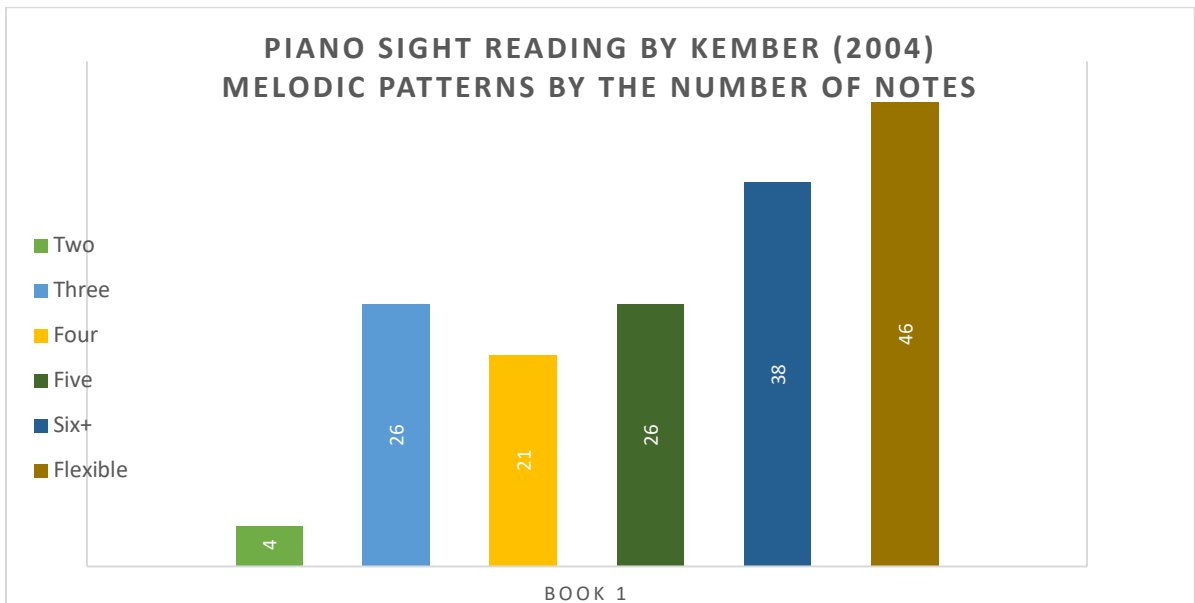
A. *Piano Sight Reading (2004): Vol. 1*

A total number of 161 melodic patterns are introduced in the first volume of *Piano Sight Reading* by Kember (2004). This series introduces the repeat, step, and skip motions and builds upon the concept of sequences to assist in grouping and recognizing larger pattern sizes. The book then explores patterns with larger intervals, up to the 5th, in different keys. A large number of melodic patterns introduced within this book contain three and four pitches, due to the introduction of the sequences and the use of drills to recognize sequences containing groups of three- or four-pitches. *Vol.1* is targeted to the beginner students up to Grade 2 level and introduces patterns within the five-finger scale range; therefore, all melodic patterns introduced in this series are limited to patterns with five pitches.



Graph 23) The number of melodic patterns by the number of pitches, Piano Sight Reading (2004), Vol.1

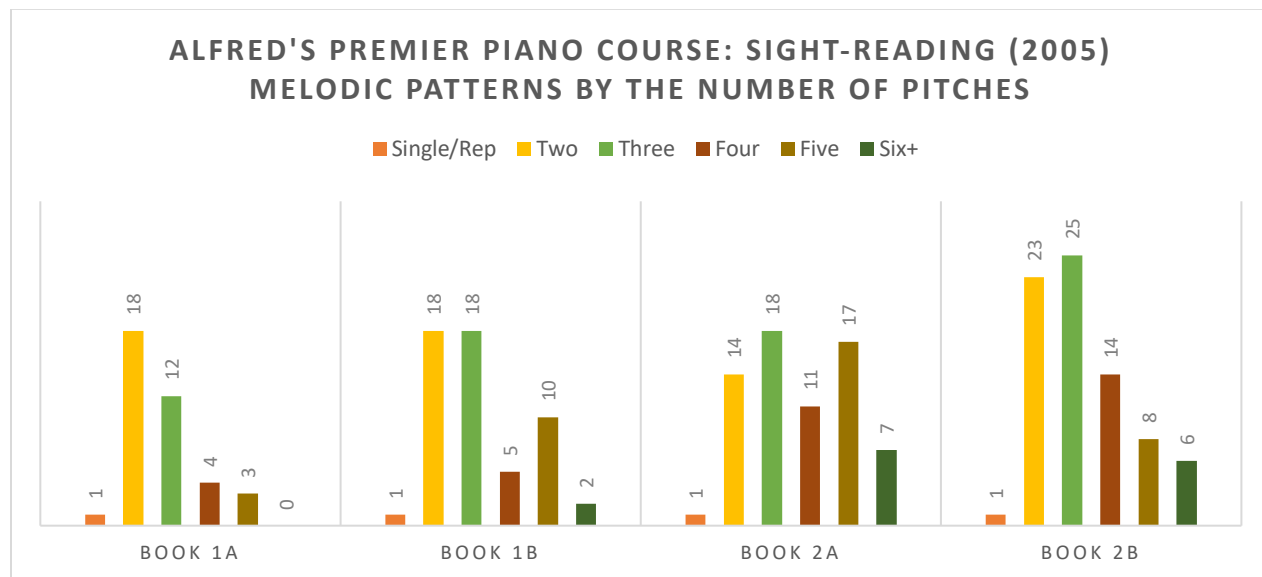
This book contains similar numbers of three-, four- and five-note patterns. The larger number of patterns with six or more notes and of patterns with a flexible number of notes indicates that the books introduce many elaborate patterns with few pitches, which aids in reinforcing memory through frequently appearing pitches and small chunks, such as intervals, within the pattern.



Graph 24) The number of melodic patterns by the number of notes, Piano Sight Reading (2004) Vol.1

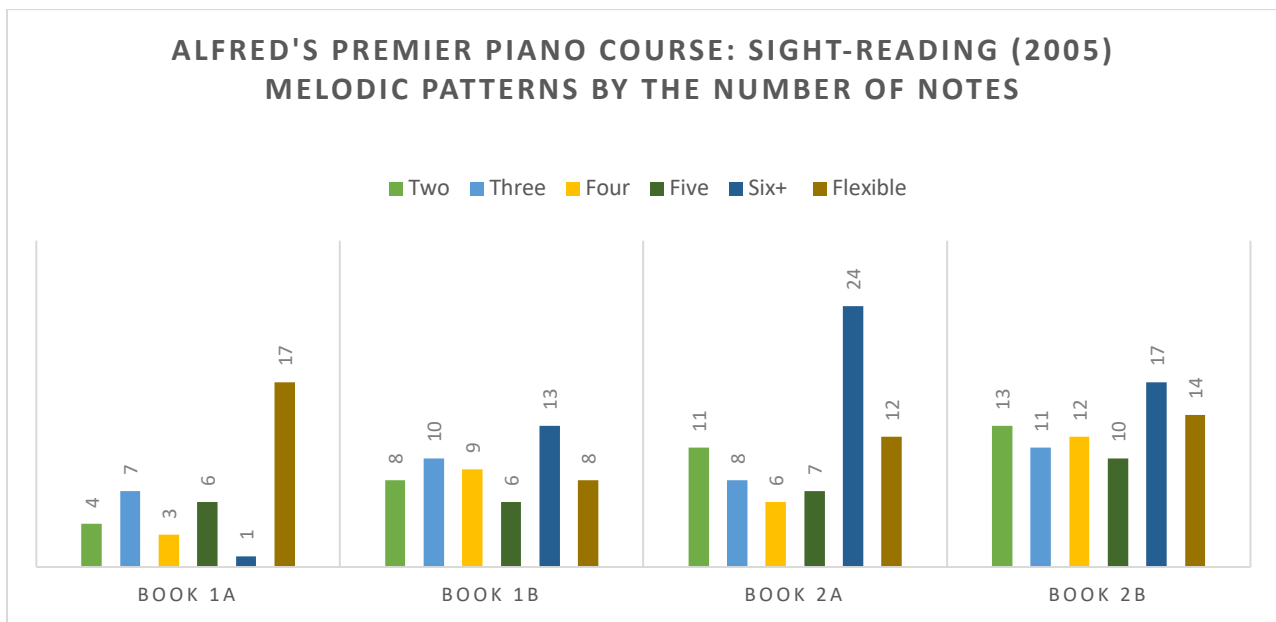
B. Alfred's Premier Piano Course Sight-Reading (2005): Book 1A, Book 1B, Book 2A, Book 2B

The *Alfred's Premier Piano Course Sight-Reading* series is a supplement series, associated with the *Alfred's Premier Piano Course* series. The sight-reading book series introduces a total of 174 melodic patterns throughout the four levels. The sight-reading series consist of five main activities, the second of which focuses on pattern recognitions by repeat, step, and skip motions (Book 1A, p.2). This pattern recognition gradually expands from a couple of pitches around landmark notes (Middle C, Bass F, and Treble G) to five-finger patterns within the C major scale. Since melodic patterns are developed from a landmark note, two pitch patterns are the most common in *Book 1A*. However, patterns with three pitches and five pitches increase in number in *Books 1B* and *2A* with the introduction of the slur, grouping three or four notes. The introduction of chords with three pitches in *Book 2B* contributes to increase in number of three-pitch patterns.



Graph 25) the number of melodic patterns by the number pitches, *Alfred's Premier Piano course: Sight-Reading (2005) series*

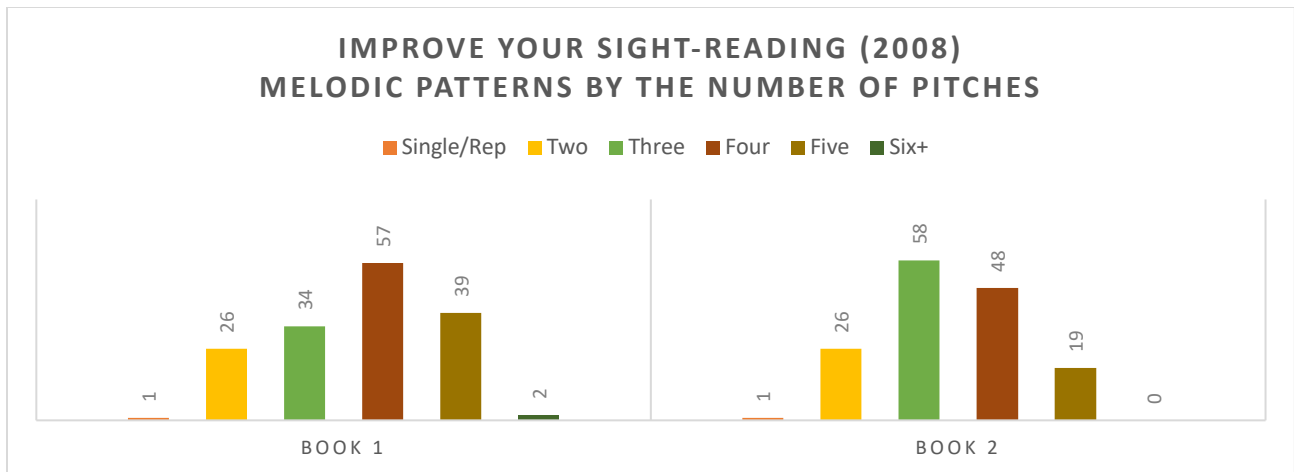
The appearance of repeated notes has a great effect on the number of patterns with a flexible number of notes, since repeated notes make the size of the pattern flexible based on the number of repeats. *Book 1A* uses a high number of patterns with a flexible number of notes. When five-finger scales and patterns are introduced in *Book 2A*, the patterns are expanded to include more pitches, associated with an increase in the number of six or more note patterns. This explains the increase of five-pitch melodic patterns in *Book 2A* compared to the five-pitch patterns in previous levels.



Graph 26) The number of melodic patterns by the number of notes, Alfred's Premier Piano Course: Sight-Reading (2005) series

C. *Improve your Sight-Reading (2008): Book 1, Book 2*

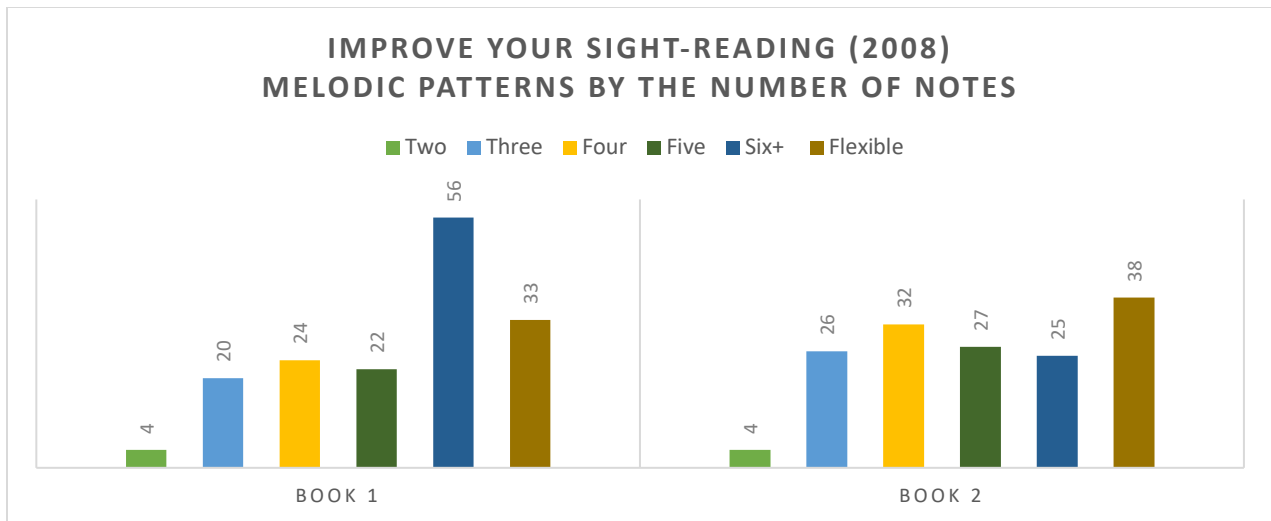
The *Improve your Sight-Reading* series presents a total of 256 melodic patterns in *Book 1* and *Book 2*. Each unit develops a recognizable melodic pattern through two fundamental concepts – repeats and steps, small leaps, various keys, and group of notes by a phrase mark.



Graph 27) The number of melodic patterns by the number of pitches, *Improve Your Sight-Reading (2008)* series.

Book 1 introduces various melodic patterns with four pitches while three pitch patterns dominate the patterns in *Book 2*. While the series introduces various patterns using three and four pitches, each pattern is defined as a “pattern” without the inclusion of specific labels, like interval, arpeggio, or scale, for assisting recall of similar patterns in different passages or contexts.

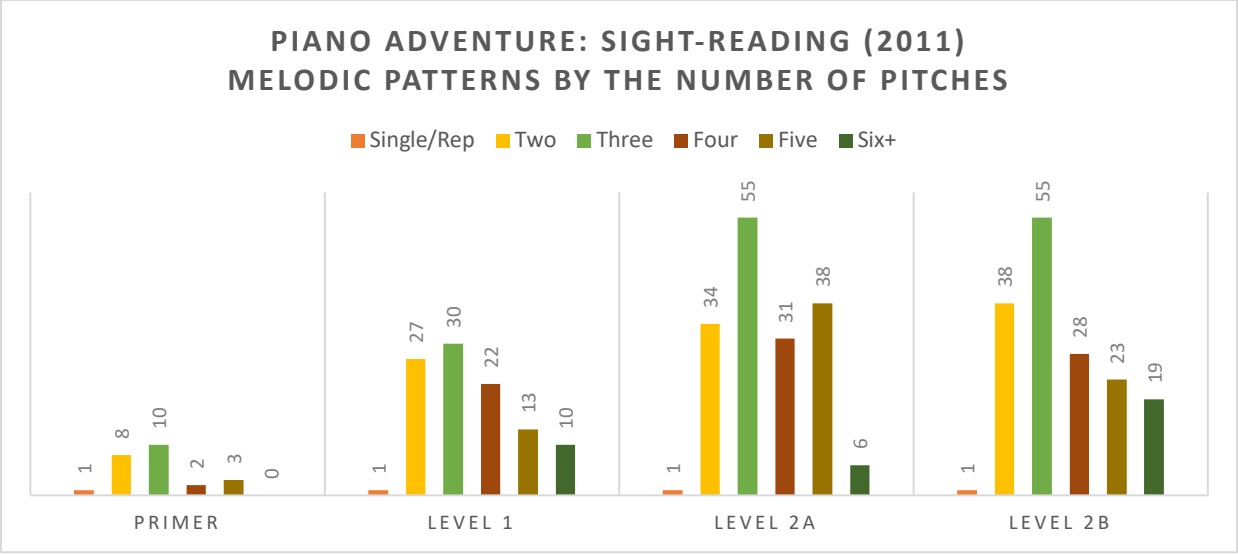
These books include a balanced number of mid-length patterns with nearly equal numbers of three-, four-, or five-note patterns introduced in both levels, although *Book 1* used more patterns with six or more notes (see Graph 28). This series increases phrase size gradually, from groups of two or three notes, to a measure with three or four notes, to two measures with more than five notes to four measures with multiple notes. Interestingly, this sight-reading series has less emphasis on reading notes based on intervals, instead presenting smaller size patterns which gradually expand to include more pitches and more notes.



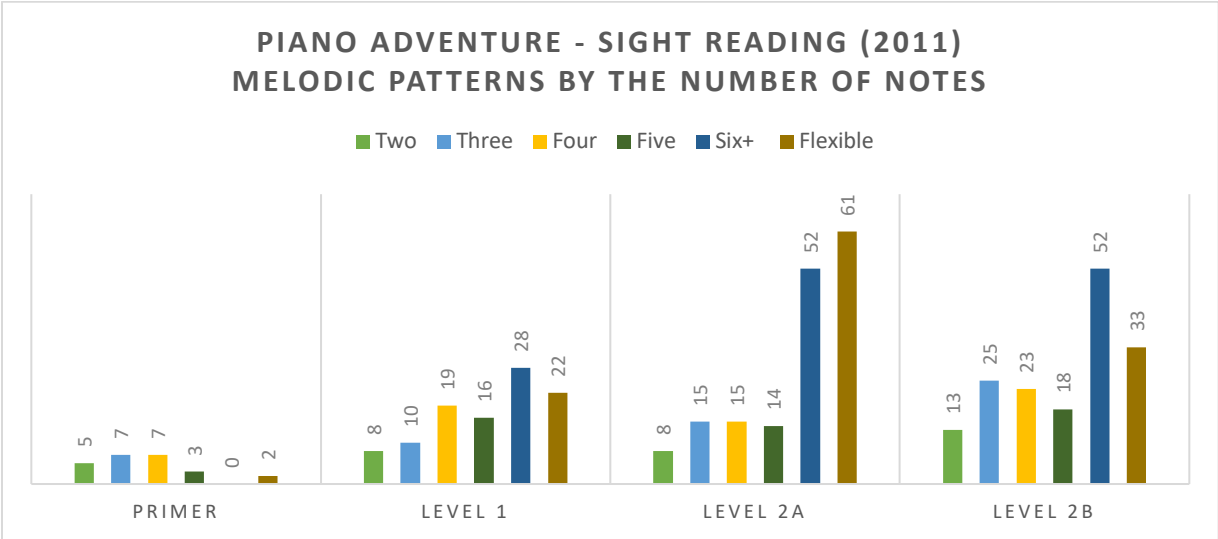
Graph 28) The number of melodic patterns by the number of notes, *Improve Your Sight-Reading (2008)* series.

D. Piano Adventure Sight-Reading (2011): Primer, Level 1, Level 2A, Level 2B

The *Piano Adventure Sight-Reading* series is a supplement series for the *Piano Adventure Lesson books* series and the melodic patterns from each level are developed based on the concepts that are introduced in the lesson book levels. This series introduces a total of 341 melodic patterns and is designed to provide frequent exposure to patterns, facilitating pattern recognition (Level 1, p.4). This series emphasizes on recognizing repeats, steps, and skips of two or three pitches. Additionally, the two-pitch groups, intervals, or three-pitch groups, triads, are commonly identified in practice pieces, which shows the high numbers of two and three-pitch patterns in Graph 29.



Graph 29) The number of melodic patterns by the number of pitches, Piano Adventure: Sight-Reading (2011) series



Graph 30) The number of melodic patterns by the number of notes, Piano Adventure: Sight-Reading (2011) series

Most patterns within this series include more than six notes or have flexible number of notes due to the inclusion of repeated notes (see Graph 30). The number of patterns with six or more notes in *Levels 1, 2A* and *2B* are associated with longer phrase markings and an increase in the number of five-note patterns is linked to the introduction of five-finger scales in different keys.

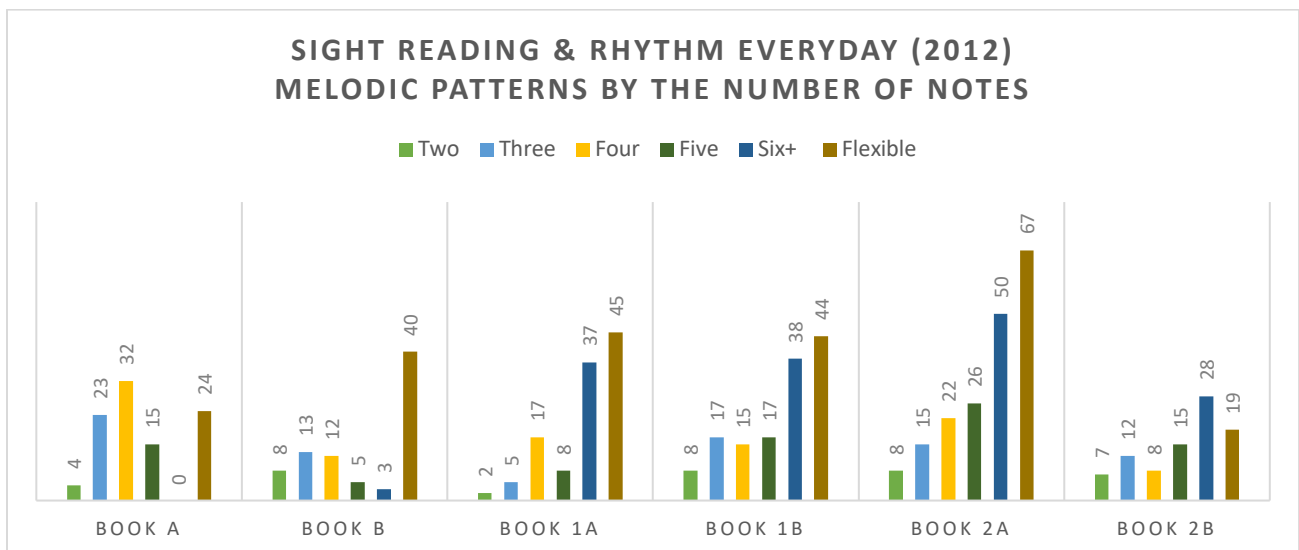
*E. Sight Reading & Rhythm Every Day (2012): Book A, Book B, Book 1A, Book 1B,
Book 2A, Book 2B*

The *Sight Reading & Rhythm Every Day* series introduces a total of 473 melodic patterns, excluding duplicated patterns, which is the greatest number of the melodic patterns among the sight-reading book series. This series has six subdivided levels from the beginner to the late beginner while other sight-reading book series have less subdivisions. Having more subdivisions provides room to include more content. This series introduces melodic patterns based on intervals. Each unit introduces intervals gradually, up to melodic and harmonic 5th, and consistently, which encourages interval recognition.

In the *Book A* and *Book B*, the majority of the melodic patterns consist of either two or three pitches (see Graph 31). Patterns with four and five pitches increase from *Book 1A* through *Book 2A*, where four-pitch patterns gradually increase through the three levels. *Book 1A* presents the greatest growth of five-pitch patterns, compared to *Book B*, due to the introduction of five-finger scales in different major keys and key signatures. Even though the series focuses on recognizing intervals based on two-pitch patterns, the series introduces various patterns and includes instructions for identifying intervals.



Graph 31) The number of melodic patterns by the number of pitches, *Sight-Reading & Rhythm Every day (2012)* series.



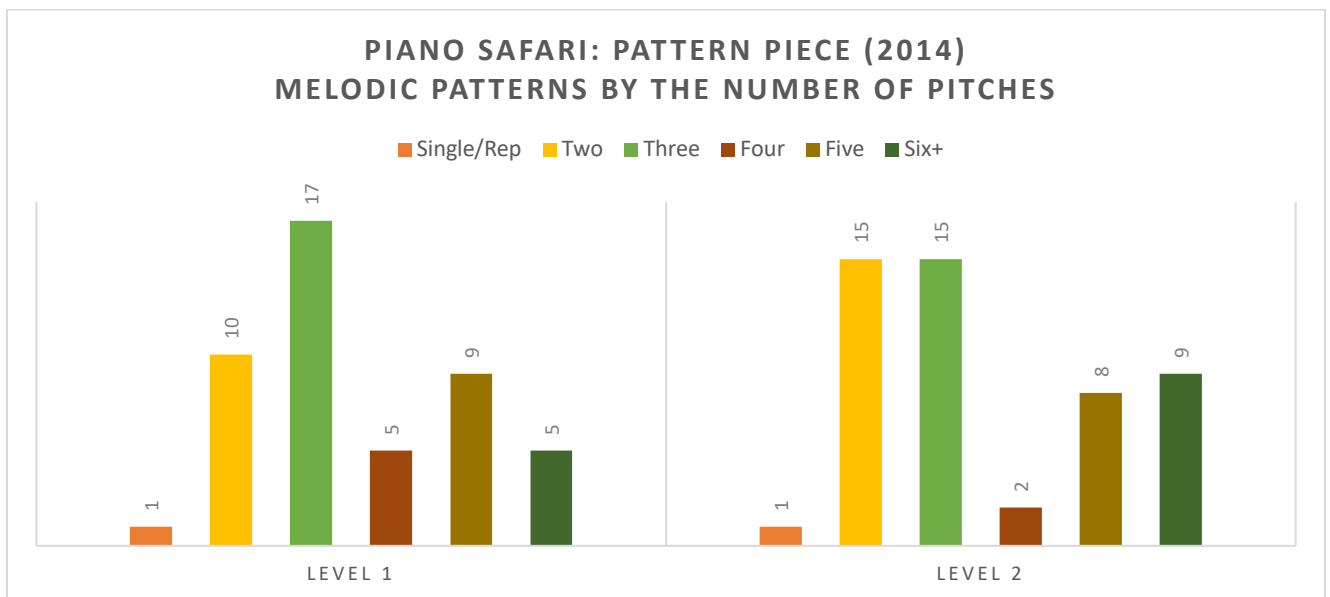
Graph 32) The number of melodic patterns by the number of notes, *Sight-Reading & Rhythm Every day (2012)* series.

Most of the patterns in *Book A* and *Book B* consists of patterns with three or four notes or are composed of patterns with a flexible number of repeated notes (see Graph 32). Six or more note patterns become the most common pattern in *Books 1A* to *2B*, not including flexible patterns. This change is associated with the introduction of five-finger scales in different keys and the expansion of phrase marks, grouping up to the length of four measures. In addition, this series increases the pattern size as the levels progress.

F. Piano Safari Pattern Piece (2014): Level 1, Level 2

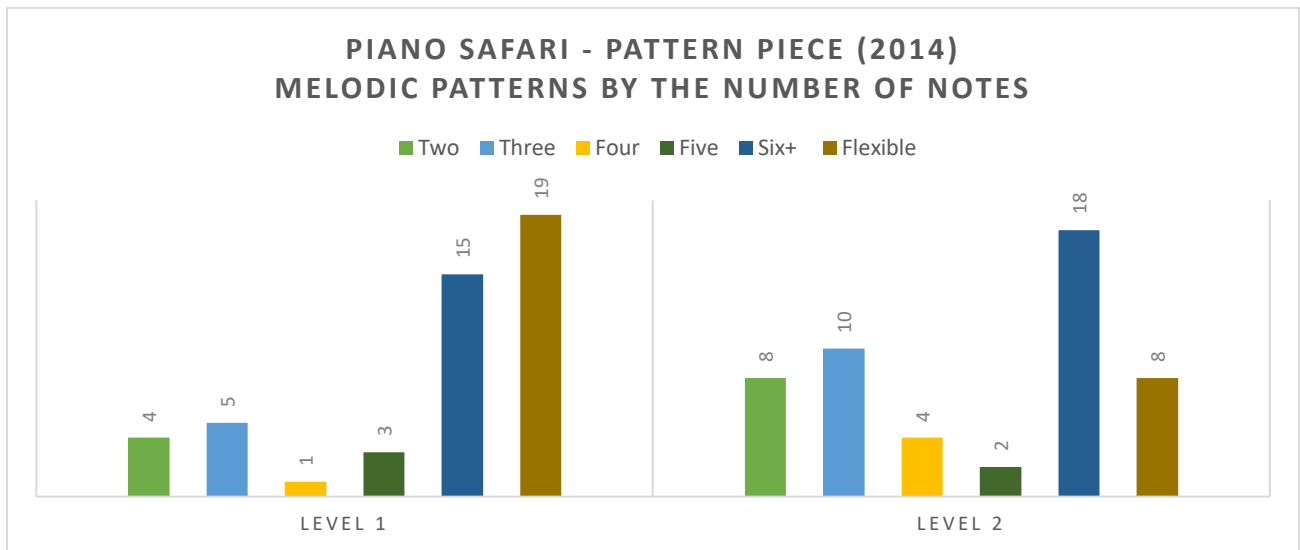
The *Piano Safari* series has two types of supplement materials: *Pattern Piece* books and a set of flash cards for sight-reading. As the focus of this study is to investigate how patterns are introduced and taught, the *Pattern Piece* books, not the sight-reading flash cards, are analyzed. The *Pattern Piece* books from *Piano Safari* introduce a total of 89 melodic patterns. *Level 1* is designed to explore patterns in different keys and *Level 2* introduces the phrase mark and encourages the grouping of notes.

Three-pitch patterns are the most common in these books and both book levels contain a limited number of patterns with four non-repeated pitches (see Graph 33). *Level 1* includes a series of half steps, whole tone scales, pentatonic scales, and their variations, which contribute to the higher number of the patterns with five and more than six pitches.



Graph 33) The number of melodic patterns by the number of pitches, *Piano Safari: Pattern Pieces (2014) series*

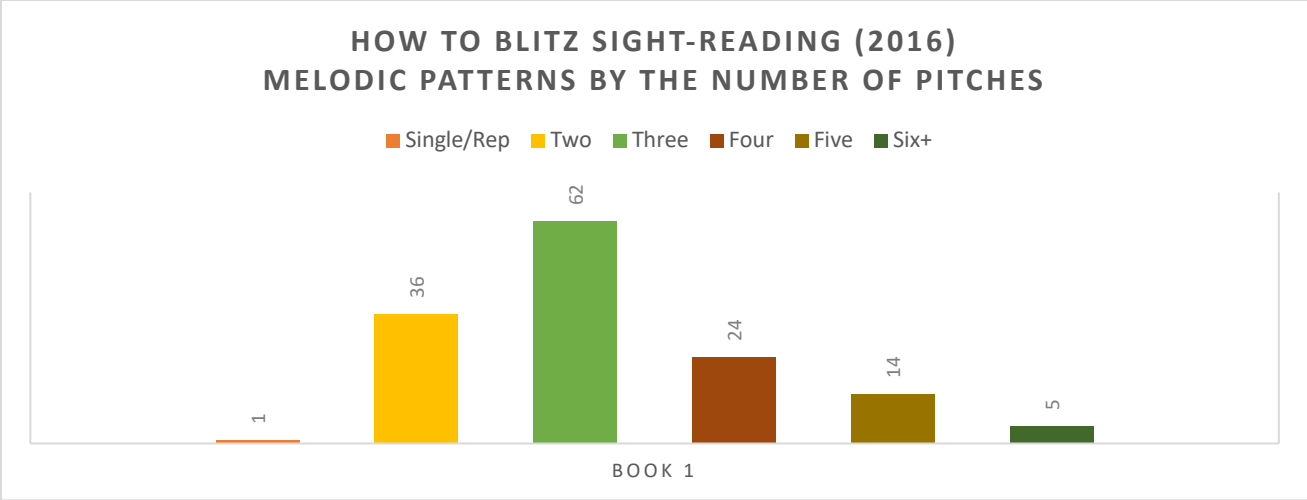
In this series, many patterns contain more than six notes (see Graph 34). This is due, in part, to the early establishment of scales, and the introduction of phrase markings over long groups of notes, exploring a wide range of registers on the piano.



Graph 34) The number of melodic patterns by the number of notes, Piano Safari: Pattern Piece (2014) series

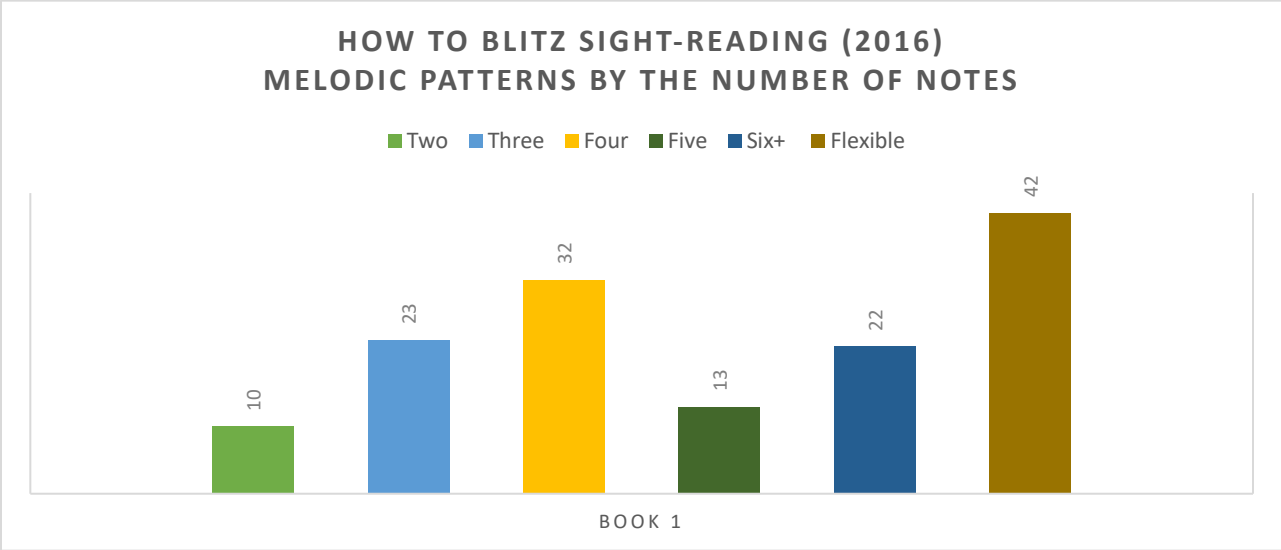
G. How to Blitz Sight Reading (2016): Book 1.

Book 1 from the *How to Blitz Sight-Reading* series is targeted to beginner students from primary to Grade 2 level in the Associate Board of the Royal Schools of Music (ABRSM). *Book 1* introduces a total of 142 melodic patterns and encourages students to recognize melodic patterns based on three fundamental concepts - repeat, step, and skip. The series presents chords separately from melodic patterns; instead of arranging chords as building pieces often established after studying intervals. Since chords are introduced as a form of triads, a group of three pitches, the number of three-pitch patterns is the greatest number of melodic patterns observed in the series. The number of two-pitch patterns is the second highest pattern arrangement, which is due to the series grouping concepts based on the relationships of two pitches such as step and skip.



Graph 35) The number of melodic patterns by the number of pitches, How to Blitz Sight Reading (2016), Book 1

While melodic patterns with three pitches are the most common, the number of patterns with flexible number of notes and four-notes are the greatest (see Graph 36). In addition, the number of patterns with more than six notes demonstrates that the series expands patterns with notes rather than increasing the number of pitches in the pattern.



Graph 36) The number of melodic patterns by the number of notes, How to Blitz Sight Reading (2016), Book 1

In summary, the sight-reading book series introduce a much larger number of melodic patterns in various sizes. Notably, the sight-reading book series includes the highest volume of

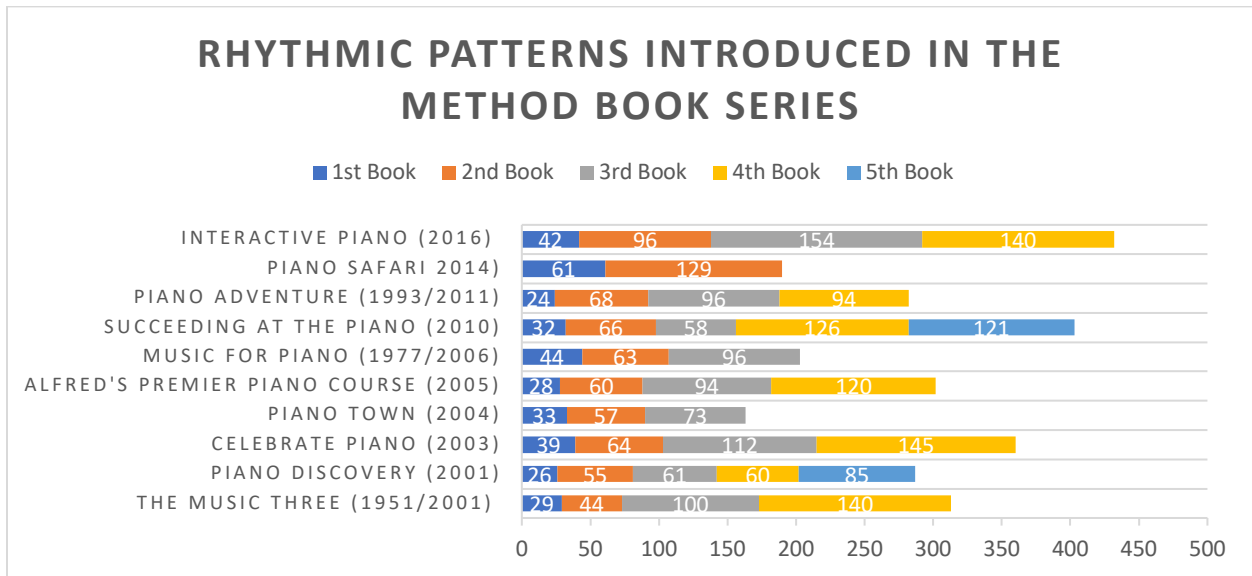
melodic patterns with groups of three or four pitches or a group of three or four notes, which fill the gaps observed in the method book series. The patterns in the sight-reading book series are frequently repeated within a passage or phrase marks, however, most of the patterns are not specifically labelled, so they are not easily referable when appearing in different contexts. Therefore, terms used to identify patterns from the sight-reading book series (intervals, chords, scales, and certain ostinatos such as Waltz or Alberti patterns) are as limited as observed in the method book series, even though they promote the reading and recognition of patterns. The patterns are often identified simply as “a pattern” regardless of its size or structure, which provides little insight into how these sight-reading book series would assist in the process of categorizing and recalling patterns cognitively.

1.2. Rhythmic patterns

2.1.1. Method book series

The number of rhythmic patterns increases as each level progresses and more concepts are introduced at each level. Introduction of more rhythmic concepts increases the possibilities of various rhythmic combinations. Unlike melodic patterns which can be identified based on intervallic relationships or types of patterns, rhythmic patterns are often introduced with time signatures, regulating the possible size and types of rhythmic patterns within a measure. Graph 37 illustrates the total number of patterns introduced in each method book series and the number of new rhythmic patterns appears at each level. The total number of the patterns exclude the rhythmic patterns introduced in previous levels. Among the ten method book series, *Interactive Piano Series* (2016) contains 432 rhythmic patterns and *Succeeding at the Piano Series* (2010) contains 403 rhythmic patterns. The series with the least amount of rhythmic pattern is *Piano*

Town (2004), which introduces only 163 rhythmic patterns, followed closely by *Piano Safari* (2014), with 190 rhythmic patterns. Interestingly, the first level of the *Piano Safari* introduces the greatest number of patterns, while most of method book series introduces between 24 to 44 rhythmic patterns in the first level of the series.



Graph 37) Total number of rhythmic patterns from the selected method book series

The next section discusses more details of each method book series. While the total number of rhythmic patterns exclude any duplicated patterns from each level, the data from each level of the method book series discusses the patterns that appear in earlier levels, comparing the actual number of rhythmic patterns in each level. The analysis describes the most common size of rhythmic patterns and the introduction of rhythmic patterns at each level.

A. *The Music Tree* (1951/2000): *Time to Begin*, *Part 1*, *Part 2A*, and *Part 2B*.

The *Music Tree* introduces a total of 313 rhythmic patterns, from *Time to Begin* to *Part 2B*, excluding duplicated rhythmic patterns found within each level. *Time to Begin* presents the concept of rhythmic notes, introducing different combinations of rhythmic patterns as the

B. *Piano Discoveries (2001): On-Staff Starter, Level 1A, Level 1B, Level 2A, Level 2B*

The *Piano Discoveries series* introduces a total of 287 rhythmic patterns from *Prep (On-Staff)* to *Level 2B*, including only new patterns that appear from each level. The series introduces a single rhythmic concept at a time, first the quarter note, then the half note and then the whole

“C? C!” Warm-Up

Figure 9) *The rhythmic pattern with a single note, Level 1A from Piano Discoveries (2001) p.40*

note, and finally introduces short rhythmic patterns with a combination of up to two concepts in a measure. The number of concepts in a rhythmic pattern increases as the series introduces different

types of rests in the middle of the *Prep (on-staff)*

level. The warm-up section displays simple rhythmic patterns with a single note, providing more exposure to certain rhythmic patterns (Figure 9). Additionally, whenever a new rhythmic concept is introduced, various patterns incorporating the new rhythm are presented (Figure 10) and the series contains sections for rhythmic exercises, specifically (Figure 11). This series presents the highest number of rhythmic patterns with two

14 **Discovering Eighth Notes**

Study the example to the right, then Clap and Say the following exercise. Keep a steady pulse of 4 beats.

Two eighth notes are equal to one quarter note.

Count: 1 2 3 4 1 and 2 and 3 4
or say: ta, ta, ta, ta, te, te, te, ta, ta

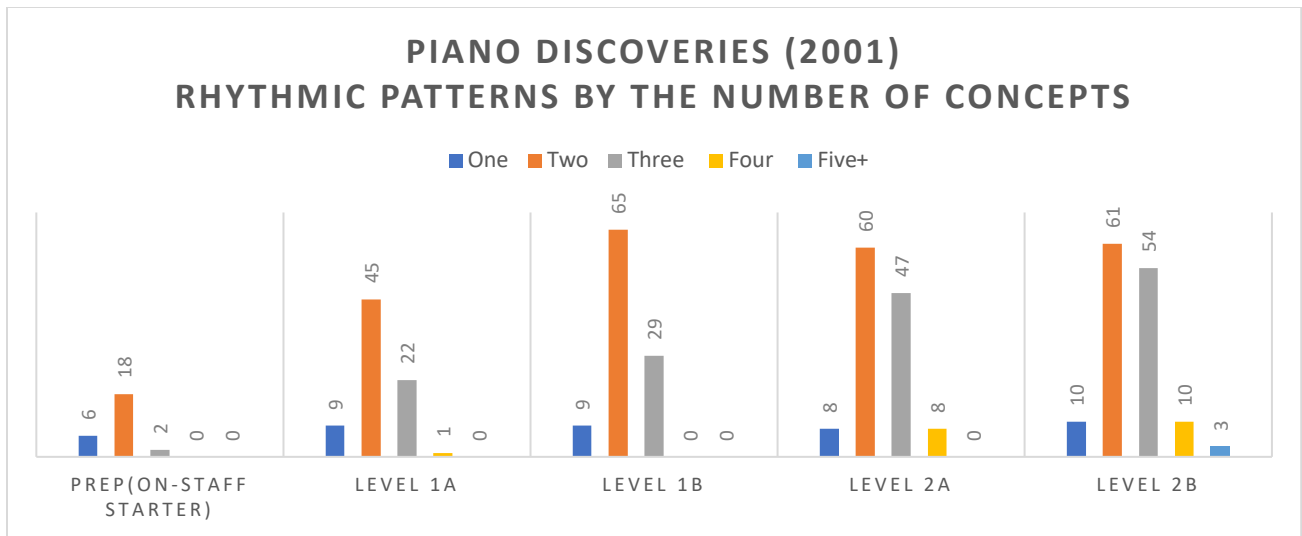
Figure 10) *The introduction of a new rhythmic concept, Level 1A from Piano Discoveries (2001) p.14*

rhythmic concepts in each level, though the growth of the three-concept rhythmic patterns is observed as the student progresses through the series.

COUNT 'N CLAP

Count each beat out loud as you clap or tap each exercise.

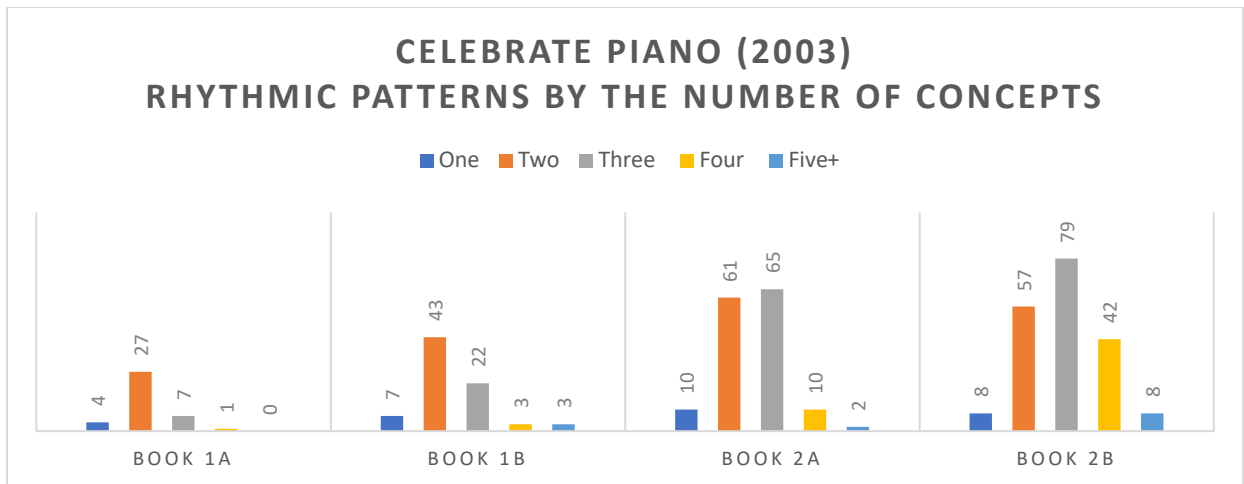
Figure 11) *Rhythm practice section, Level 1B from Piano Discoveries (2001) p.24*



Graph 39) The number of rhythmic patterns by the number of concepts, *Piano Discoveries (2001)* series

C. *Celebrate Piano (2003): Book 1A, Book 1B, Book 2A, Book 2B.*

The *Celebrate Piano* series introduces a total of 360 unique rhythmic patterns throughout the four levels. Like the previous discussed series, this series also introduces the quarter note as the first rhythmic concept, however, it is not named until the introduction of the half note. Rhythmic concepts are presented as “a pattern of short and long sounds” (Book 1A, p.16), combining quarter and half notes. Review activities in each unit provides opportunities to focus on learning various combinations of rhythmic patterns, separate from melodic patterns or practice pieces. The first two levels most frequently introduce rhythmic patterns with two rhythmic concepts. *Level 2A* and *Level 2B* presents an increased number of three rhythmic patterns compared to two-rhythmic concept patterns, with *Level 2B* presenting more elaborate rhythmic patterns with four or more than five rhythmic concepts.



Graph 40) The number of rhythmic patterns by the number of concepts, Celebrate Piano (2003) series

D. Piano Town (2004): Primer, Level 1, Level 2

The *Piano Town* series consists of a total of 163 rhythmic patterns from *Primer* to *Level 2*, which is the least number of rhythmic patterns among the ten method book series investigated. The series presents quarter notes and half notes together, with rhythmic patterns containing both concepts (Figure 12), instead of presenting one concept at a time. The *Primer* level covers more

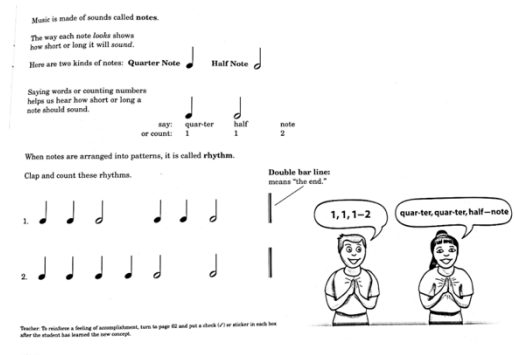
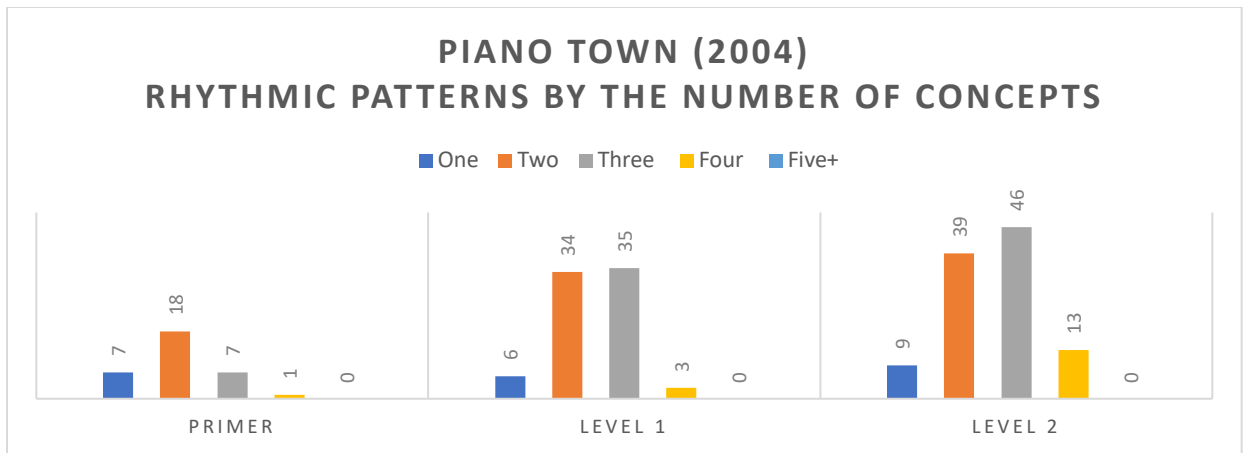


Figure 12) The introduction of the rhythmic concepts, *Primer* from *Piano Town* (2004) p.7

increase the possibilities of more elaborate rhythmic patterns, rhythmic patterns consisting of two concepts are the most common. In *Levels 1* and *2*, rhythmic patterns with three concepts appear the most, with a moderate increase in patterns composed of four rhythmic concepts.

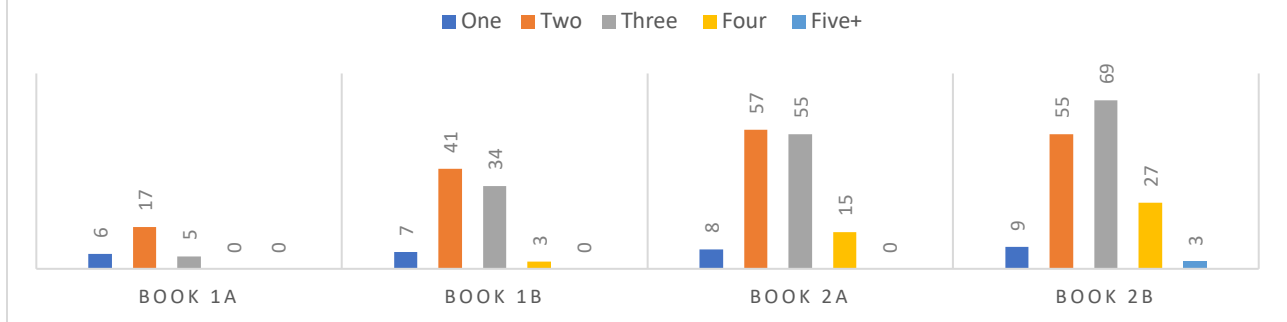


Graph 41) The number of rhythmic patterns by the number of concepts, Piano Town (2004) series

E. Alfred's Premier Piano Course (2005): Book 1A, Book 1B, Book 2A, Book 2B

The *Alfred's Premier Piano Course* series introduces a total of 302 rhythmic patterns between *Books 1A to 2B*, excluding duplicated patterns. This series introduces individual rhythmic concepts separately, in one or two related rhythmic patterns, with the quarter rest introduced shortly after the quarter note. *Book 1A* clearly indicates patterns in practice pieces with numbers. These patterns are introduced with labels, like “rhythmic pattern no. 1”, which make the patterns referable (*Book 1A*, p.6). From *Book 1B*, each unit contains a new rhythmic pattern, building rhythmic patterns continuously, however, these new patterns are no longer accompanied with labels. From *Book 1A* to *Book 2A*, rhythmic patterns with a combination of two concepts are the most observed patterns, while *Book 2B* contains more rhythmic patterns with three concepts than patterns with two concepts. The number of rhythmic patterns for each level gradually increases including the number of rhythmic patterns with four concepts.

ALFRED'S PREMIER PIANO COURSE (2005) RHYTHMIC PATTERNS BY THE NUMBER OF CONCEPTS



Graph 42) The number of rhythmic patterns by the number of concepts, Alfred's Premier Piano Course (2005) series

F. Music for Piano (1977/2006): Kinder-Keyboard, Book 1, Book 2

The *Music for Piano* series presents a total of 203 rhythmic patterns throughout three levels, excluding duplicated patterns. In *the Kinder-Keyboard*, the rhythmic concepts are

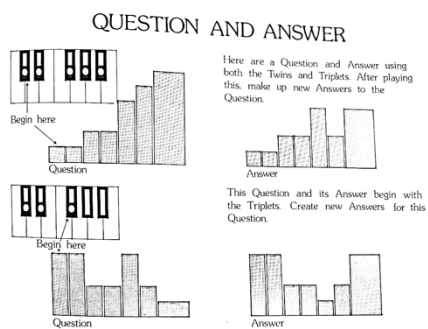


Figure 13) Rhythmic value displayed by the width of the block, *Kinder-Keyboard* (1977) from *Music for Piano* p.15

introduced, and their time value highlighted with a box (Figure 13). Quarter notes and dotted half notes in 3/4 time appear first, unlike other method book series which introduces quarter notes in 4/4 time, and these notes are displayed with shaded blocks indicating their time value

(Figure 14). Rhythmic concepts with names and time values are formally introduced in *Book 1*, where time values are



Figure 14) A shaded block presenting the duration of rhythmic value, *Kinder-Keyboard* (1977) from *Music for Piano* p.17

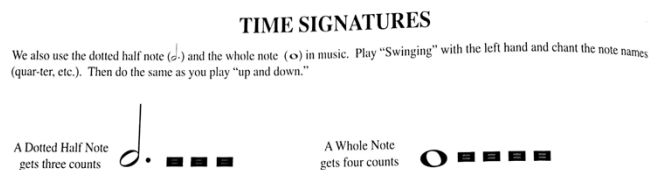
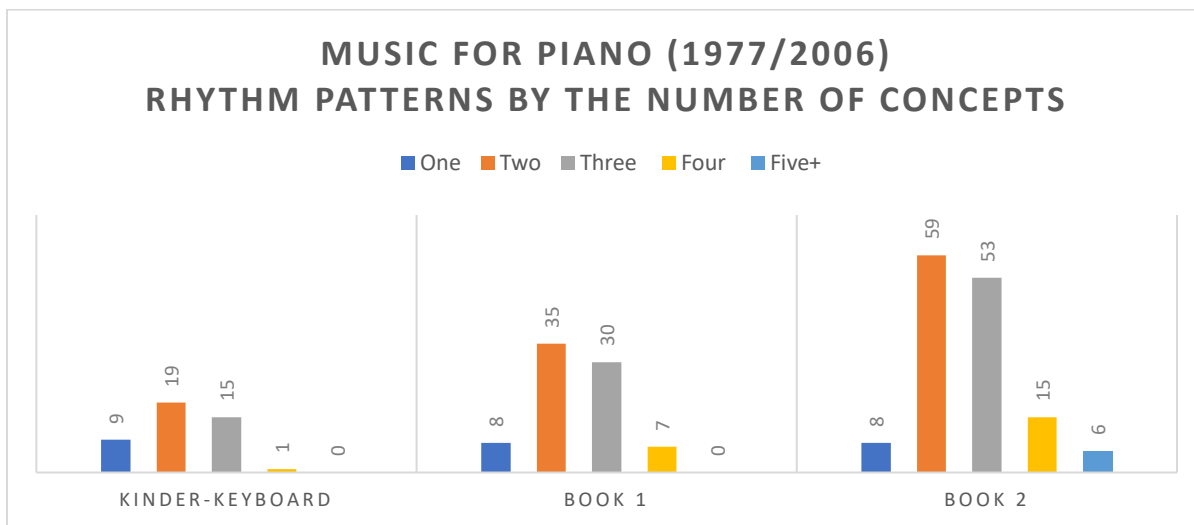


Figure 15) a dashed line display for rhythmic values, *Book 1* (2006) from *Music for Piano* (2006) p.10.

displayed with a dashed line (Figure 15). By the end of *Book 2*, the concept of eighth notes,

dotted quarter notes, dotted eighth notes and sixteenth notes are introduced. This is the only series that introduces sixteenth notes between the primary level to level 2, the late beginner level. Although the series presents a wide scope of rhythmic concepts, most rhythmic patterns appearing in each level consist of only two or three rhythmic concepts. Interestingly, rhythmic patterns with two concepts are dominate at all levels, although three-concept rhythmic patterns also increase in number as the series progresses.

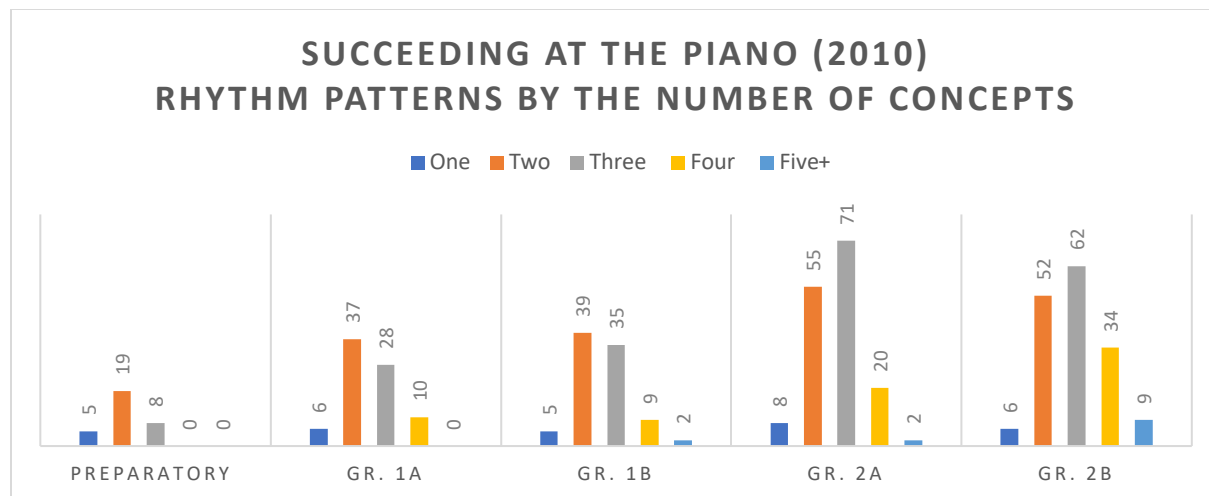


Graph 43) The number of rhythmic patterns by the number of concepts, Music for Piano (1977/2006) series

G. Succeeding at the Piano (2010): Preparatory, Grade 1A, Grade 1B, Grade 2A, Grade 2B

The *Succeeding at the Piano* series introduces a total of 403 unique rhythmic patterns. The preparatory level presents simple rhythmic patterns with a combination of four quarter notes, two quarter notes and half notes, and three quarter notes and a dotted half note, before explaining the concept of a quarter note. Following this introduction, a quarter note and a half note are presented sequentially, with the same pattern appearing several times. The rhythmic patterns in this level are composed with four rhythmic concepts – a quarter note, a half note, a dotted half note, and a whole note, with most rhythmic patterns consisting of a combination of two rhythmic

concepts. When a new rhythmic concept is introduced, the series provides various example patterns which apply the new concept. Up to *Grade 1B*, rhythmic patterns with two concepts are the most common, but the number of three-concept rhythmic patterns increases in *Grade 2A* and *Grade 2B*. The larger size rhythmic patterns, containing four or more than five concepts, gradually appear later in the series.

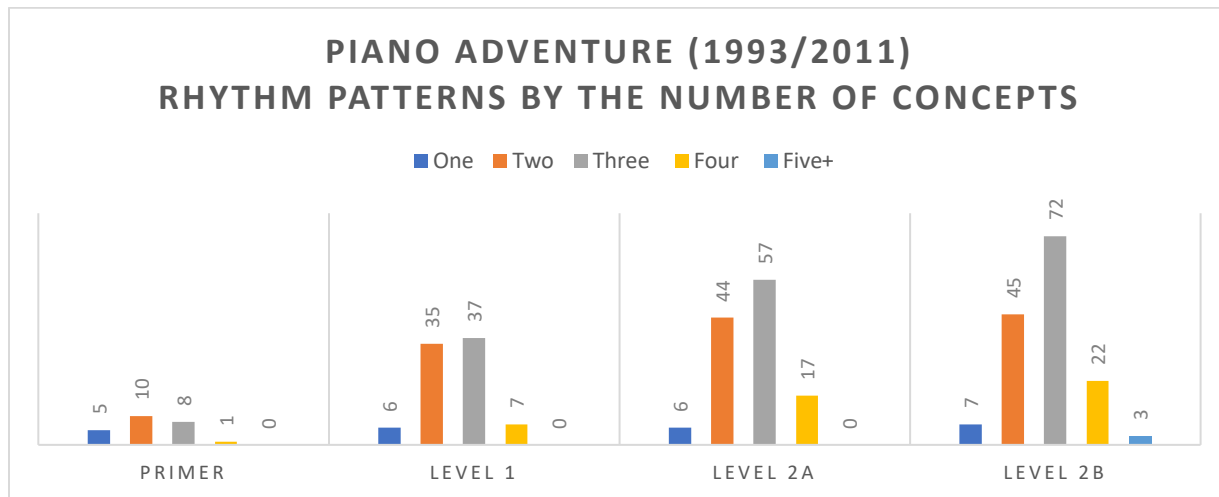


Graph 44) The number of rhythmic patterns by the number of concepts, *Succeeding at the Piano (2010)* series

H. *Piano Adventure (1993/2011): Primer, Level 1, Level 2A, Level 2B*

The *Piano Adventure* series presents a total of 282 rhythmic patterns from four levels, excluding any duplicated patterns. The series introduces rhythmic concepts one at a time with example patterns. The *Primer* level covers quarter notes, half notes, dotted half notes, whole notes, and quarter rests, with this book introducing the least number of rhythmic patterns compared to the first level of other method book series. However, the number of rhythmic patterns increases substantially from *Level 1* and the number of rhythmic patterns with three concepts are the most common in *Level 1* to *Level 2B*. Unlike other method book series, which contain more rhythmic patterns with two concepts, this series displays greater numbers for patterns with three concepts in subsequent levels, except at the *Primer* level. Even at the *Primer*

level, the differences between the number of patterns with two concepts and three concepts is minimal. The number of the rhythmic patterns with four concepts gradually increases as the series progresses, and more rhythmic concepts are introduced.

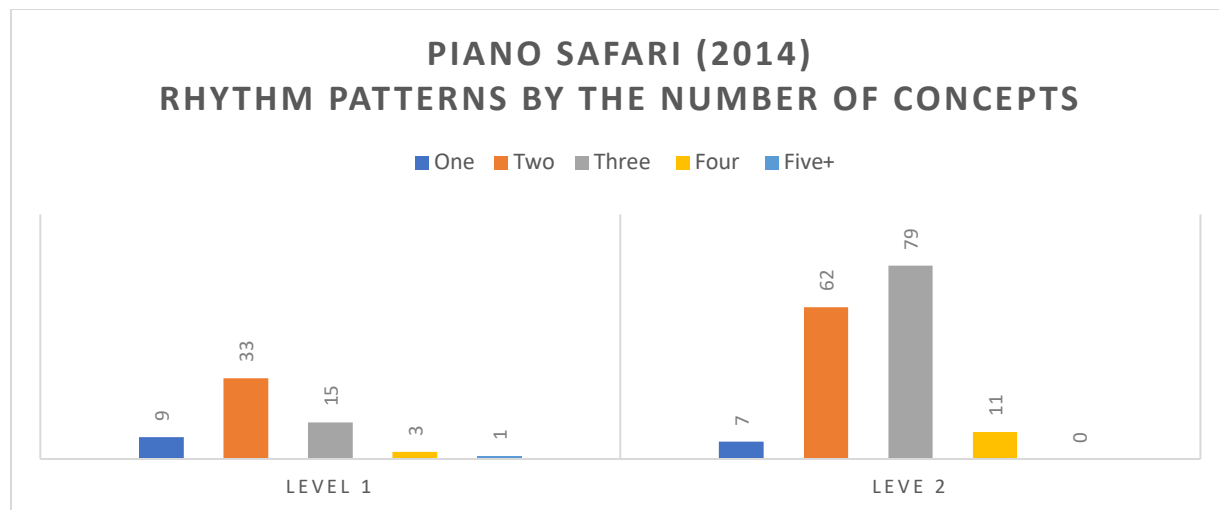


Graph 45) The number of rhythmic patterns by the number of concepts, Piano Adventure (1993/2011) series

I. Piano Safari (2014): Level 1, Level 2

The *Piano Safari* series introduces a total of 190 unique rhythmic patterns over two levels. Even though the series contains the second least number of introduced rhythmic patterns, the first level of this series introduces the greatest number of rhythmic patterns compared to the first level of other method book series. Unique to this series, the *Piano Safari* introduces quarter notes, half notes, and the concept of two eighth notes at the beginning of the first level, while the other method book series introduce the concept of eighth notes later in the series or within the first level of the series. Throughout *Level 1*, the concept of quarter notes, half notes, dotted half notes, whole notes, two eighth notes, quarter rests, half rests and whole rests are covered. While some concepts are introduced one at a time, some are introduced as a group. For example, the concept of whole note is presented solely (Level 1, p.33) while the concept of a whole rest in 3/4 time, a dotted half note, and a quarter rest are introduced together (Level 1, p.65). Even though a

variety of rhythmic concepts are presented in *Level 1*, rhythmic patterns with two concepts are the most common in *Level 1*, and three-concept patterns are the most common in *Level 2*. Few patterns combining four concepts are introduced in this series, and no patterns consisting of five or more concepts are present.

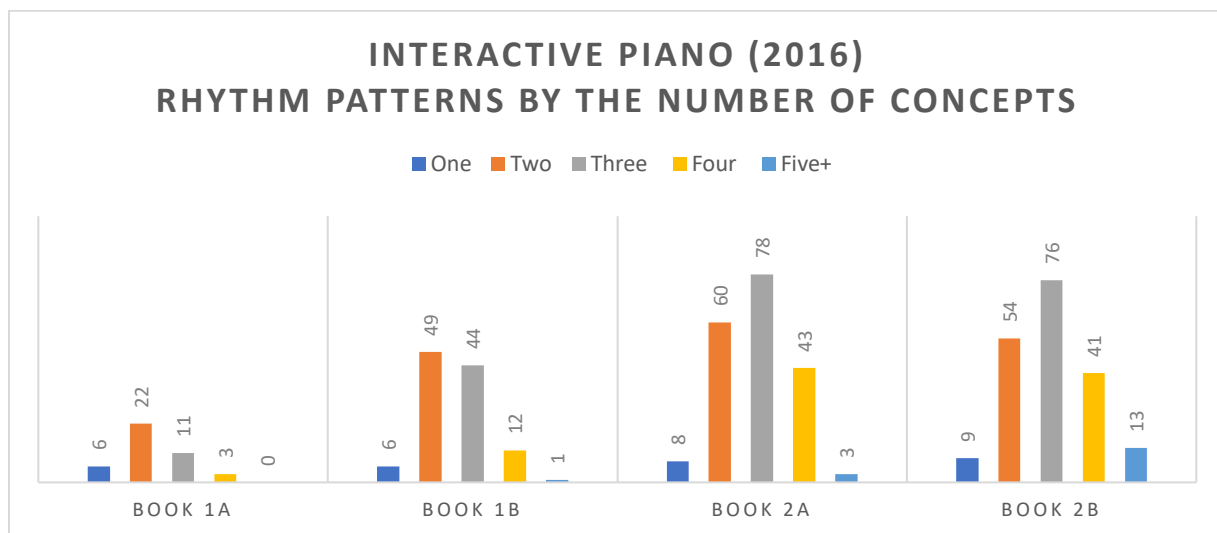


Graph 46) The number of rhythmic patterns by the number of concepts, Piano Safari (2014) series

J. Interactive Piano (2016): Book 1A, Book 1B, Book 2A, Book 2B

The *Interactive Piano* series contains a total of 432 rhythmic patterns over four levels, excluding duplicated patterns. This series displays the greatest number of rhythmic patterns among the ten method book series. In *Book 1A*, rhythmic concepts are presented one at a time, including quarter notes, half notes, whole notes, quarter rests, dotted half notes, half rests, and whole rests, which provide more options for various combinations of rhythmic concepts early in the series. Since *Book 1A* introduces the majority of the basic rhythmic concepts, *Book 1B* focuses on developing various rhythmic patterns utilizing the previously introduced rhythmic concepts. The concept of eighth notes is added in *Book 2A* and *Book 2B* introduces the concepts of dotted quarter notes and eighth rests. As a variety of concepts are introduced in *Book 1A*,

many of the rhythmic patterns consist of two concepts, with fewer pattern composed of three rhythmic concepts. However, *Book 1B* establishes almost twice as many rhythmic patterns with two rhythmic concepts and quadruple the amount of rhythmic patterns with three concepts than *Book 1A*. In the earliest level of this series, the rhythmic patterns with two rhythmic concepts are the most common, despite the considerable increase of rhythmic patterns with three concepts. Yet, rhythmic patterns with three rhythmic concepts dominate in *Book 2A* and *Book 2B*, with the number of the rhythmic patterns with four concepts continuously increasing as more rhythmic concepts are included.



Graph 47) The number of rhythmic patterns by the number of concepts, *Interactive Piano (2016) series*

Overall, most of the method book series introduce individual rhythmic concepts separately, where introduced patterns are composed of the introduced rhythmic concepts. As more rhythmic concepts are introduced, there is an associated increase in pattern size, however, the majority of patterns in all series are generally composed of two or three rhythmic concepts. Patterns with two rhythmic concepts are mainly observed in the earlier book levels with patterns containing three rhythmic concepts introduced later in the method book series. As the levels

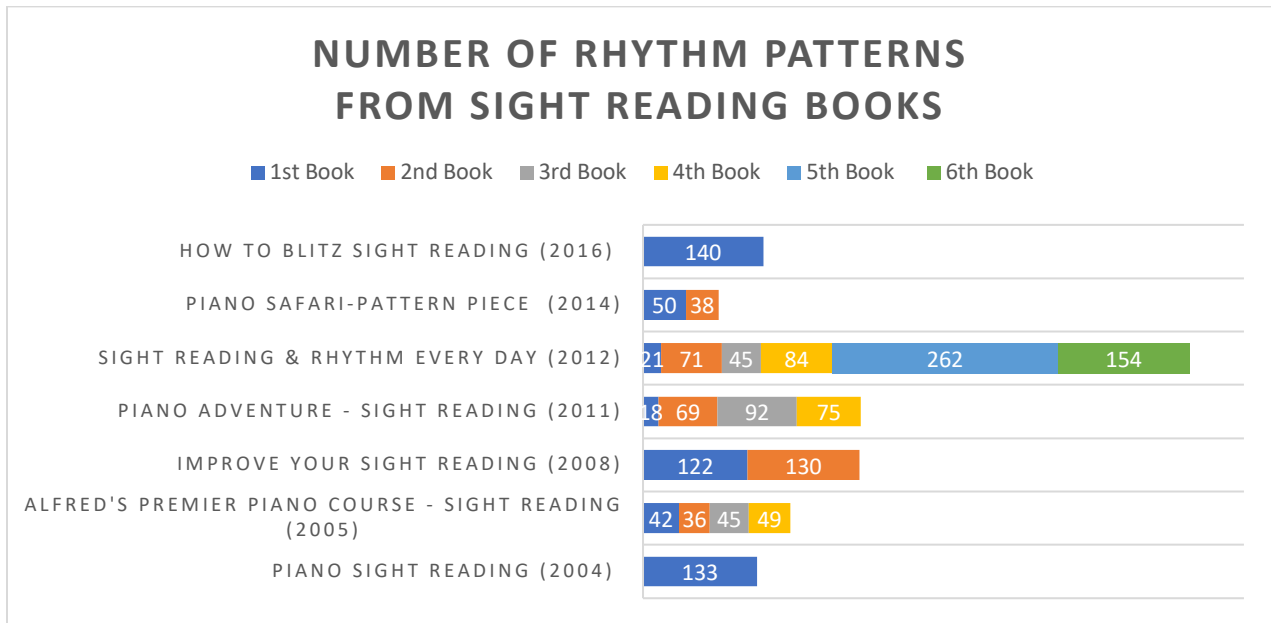
progress, the number of patterns in each level increase, meaning that more combinations of patterns are present even if the size of the patterns consists mostly of two or three concepts.

2.2.2. Sight-reading book series

Unlike the method book series, sight-reading book series introduce patterns without including explanations about rhythmic concepts. Since sight-reading book series are used as supplementary materials, these series aim to provide extended note reading experience through various types of patterns and short practice drills. Among the seven sight-reading book series, *Alfred's Premier Piano Course: Sight-reading* (2005), *Piano Adventure: Sight-Reading* (2011), and *Piano Safari: Pattern-piece* (2014) are directly associated with their respective method book series. Therefore, the content is designed to reinforce patterns introduced within the method book series. On the other hand, *Piano Sight reading* (2004), *Improve your Sight-reading* (2008), *Sight reading & Rhythm Every day* (2011), and *How to Blitz Sight-reading* (2016) establish rhythmic patterns independently based on each series distinct pace and logic.

The chart showing the number of rhythmic patterns found in each sight-reading book series demonstrates that the largest numbers of rhythmic patterns are introduced if the first level of the series covers contents for early to late beginners. For example, *Piano Sight-reading* (2004) Vol. 1 is designed to cover levels between primer and Grade 2, and *Book 1* of the *How to Blitz Sight-Reading series* (2014) is also designed for primary to grade 2 levels. Each of these series presents over 100 rhythmic patterns in a single book. In contrast some Sight-reading book series are divided into different levels, however, the total number of rhythmic patterns is similar to those discussed above. For instance, the *Improve your Sight-reading* (2008) series introduces 252 rhythmic patterns over two levels, and *Piano Adventure: sight-reading* (2011) contains 254 new

rhythmic patterns over four levels. *Sight-reading & Rhythm Every day* (2012) series is not only divided into the most levels, but also presents the most rhythmic patterns, a total of 637 rhythmic patterns, excluding duplicates, while the pattern piece from Piano Safari series displays the least number of rhythmic patterns, with a total of only 88 rhythmic patterns.



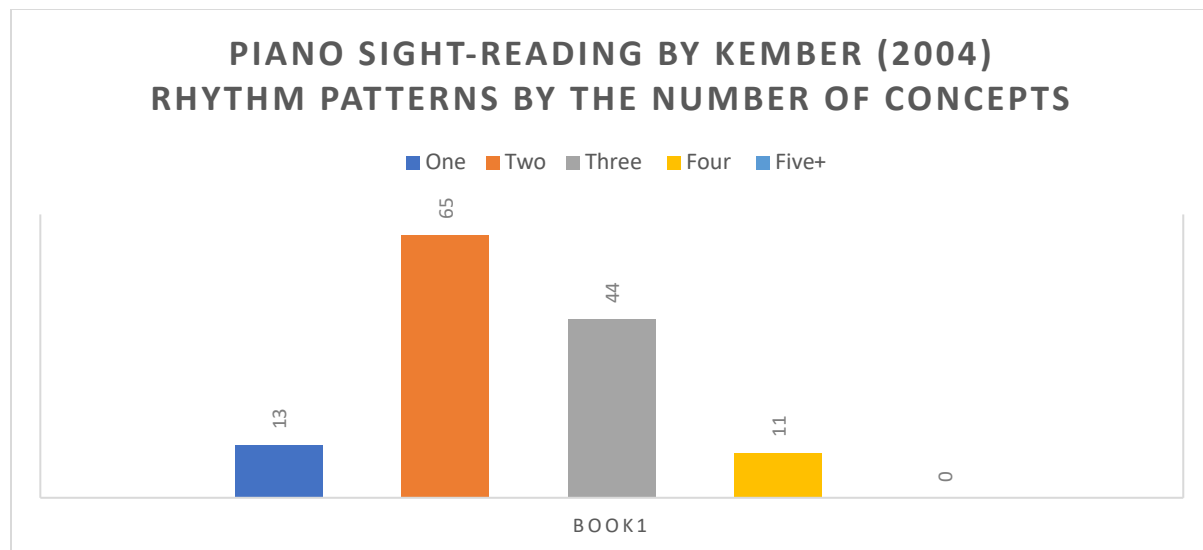
Graph 48) Total number of rhythmic patterns from the selected Sight-Reading book series

The next section analyzes the size of rhythmic patterns introduced in each sight-reading book series and how the patterns are established as the levels progress, if applicable. While the above graph presents the total number of unique rhythmic patterns, the analysis of individual series and each level within each series, includes the number of introduced rhythmic patterns as this displays the establishment and growth of rhythmic patterns in each level.

A. *Piano Sight-Reading (2004): Vol. 1*

The *Piano Sight-Reading: Vol. 1* introduces a total of 133 rhythmic patterns. This series presents different combinations of rhythmic patterns reflecting meters, upbeats, ties, or

syncopations instead of introducing the rhythmic concept for individual note values. The most frequently observed rhythmic patterns in this series are rhythmic patterns consisting of two rhythmic concepts, followed by the patterns with three concepts. Despite the larger number of rhythmic patterns introduced in a single level, the size of the rhythmic patterns is limited, with few patterns consisting of more than four rhythmic concepts.

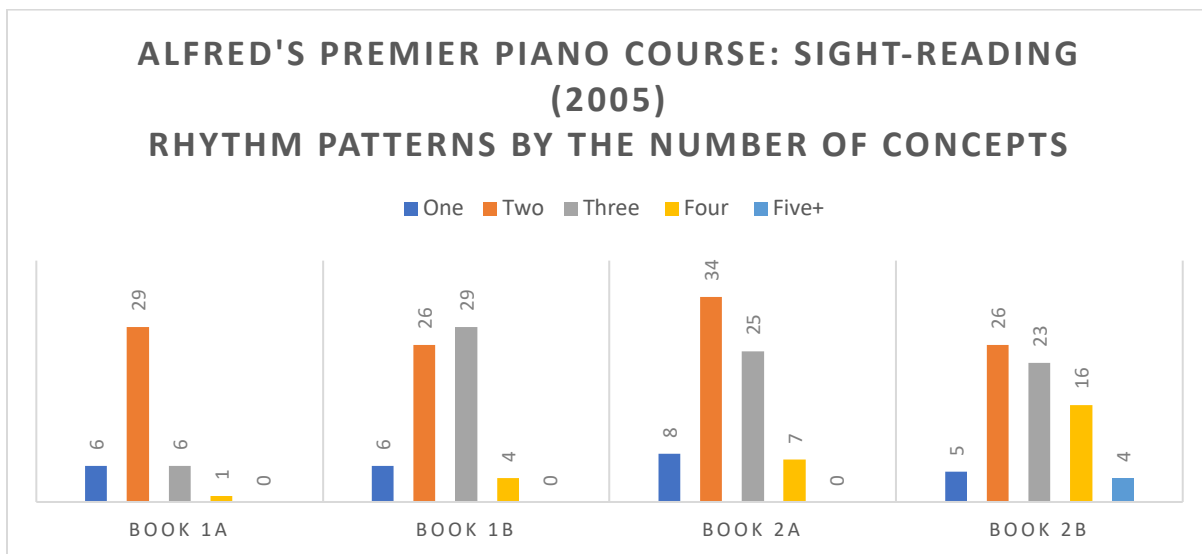


Graph 49) The number of rhythmic patterns by the number of concepts, *Piano Sight-Reading: Vol. 1 (2004)*

B. Alfred's Premier Piano Course Sight-Reading (2005): Book 1A, Book 1B, Book 2A, Book 2B

The *Alfred's Premier Piano Course: Sight-Reading* series is associated with the *Alfred's Premier Piano Course Lesson* book series. The sight-reading book series consists of four levels, like the method book series, and presents a total of 172 rhythmic patterns. The number of new rhythmic patterns is fairly evenly divided between each level, 42 patterns in *Book 1A*, 36 patterns in *Book 1B*, 45 patterns in *Book 2A*, and 49 patterns in *Book 2B*. Each unit of this series is organized into five main activities (Book 1A, p.2), with the third activity focusing on learning rhythmic patterns. This third activity displays a four-measure rhythmic passage consisting of one

or two rhythmic patterns with instructs asking to tap out the rhythmic patterns. As the graph indicates (see Graph 50), the majority of the rhythmic patterns in *Book 1A* consist of two rhythmic concepts. Rhythmic patterns with the three concepts dramatically increase in *Book 1B*, and *Book 2B* shows more balance with regards to the number of rhythmic patterns with two, three and four concepts, including the appearance of larger patterns consisting of five or more rhythmic patterns.

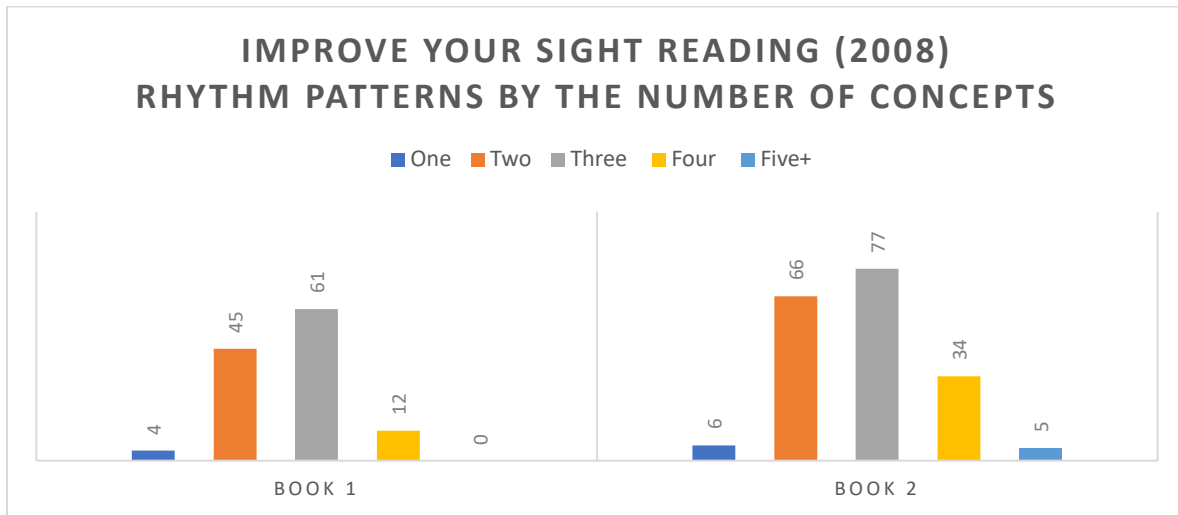


Graph 50) The number of rhythmic patterns by the number of concepts, Alfred's Premier Piano Course: Sight-Reading (2005) series

C. *Improve your Sight Reading (2008): Book 1, Book 2*

Book 1 and *Book 2* from the *Improve your Sight-Reading* series target early to late beginner students and include a total of 252 rhythmic patterns. Each stage in *Book 1* is organized to present four to eight rhythmic passages consisting of two or three rhythmic patterns with a few numbers of focused rhythmic concepts. For example, when the quarter note and quarter rest are introduced, four-measure rhythmic passages are created using rhythmic patterns with two rhythmic concepts: quarter notes and quarter rests, including instructions to students to create their own rhythmic patterns using these two concepts. The length of rhythmic passages is

increased in later stages. *Book 2* is structured in the same manner as *Book 1*, including additional rhythmic concepts such as dotted quarter notes, eighth notes, and 3/4 time signatures. Rhythmic patterns with three concepts are the most common patterns in both levels, with *Book 2* showing a growing number of rhythmic patterns in all categories.



Graph 51) The number of rhythmic patterns by the number of concepts, *Improve Your Sight-Reading (2008) series*

D. *Piano Adventure Sight-Reading (2011): Primer, Level 1, Level 2A, Level 2B*

The *Piano Adventure Sight-Reading* series is part of *Piano Adventure Method* book series, presenting a total of two hundred and fifty-four rhythmic patterns. Unlike some sight-reading books that introduce rhythmic patterns separately prior to practice drills, this series encourages students to recognize rhythmic patterns within practice pieces (Figure 16). Although this series provides daily practice pieces without separate rhythm reading activities, each piece features a few rhythmic patterns that are obviously recognizable and frequently repeated, including instructions which highlight

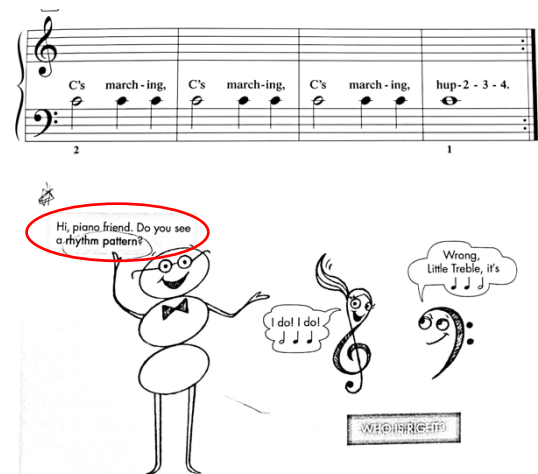
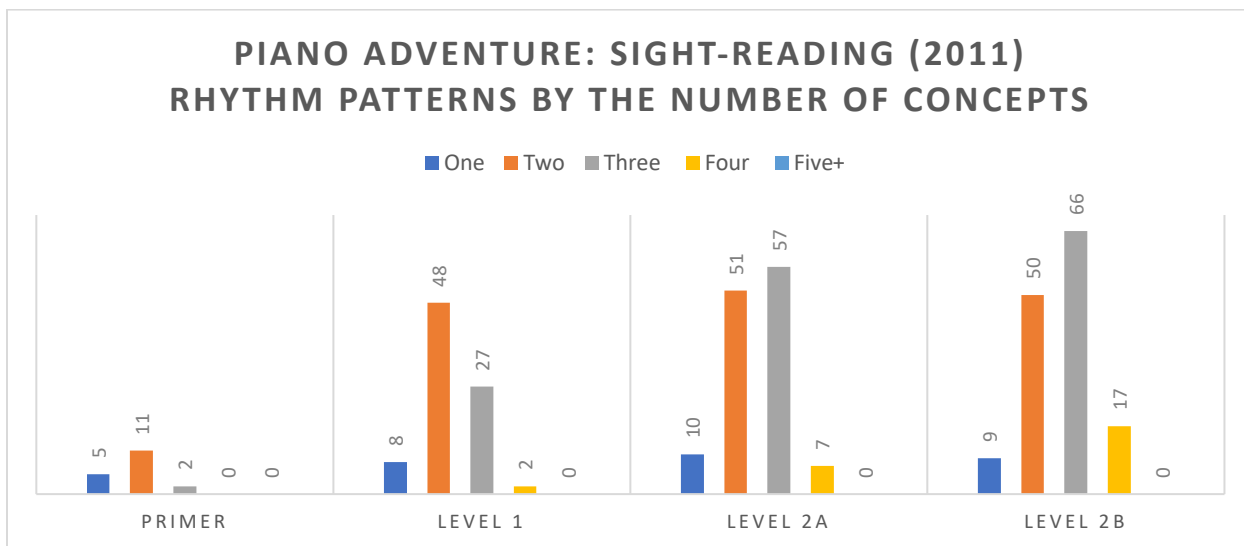


Figure 16) The question to recognize rhythmic patterns, *Primer from Piano Adventure Sight-Reading (2011) p.9.*

the featured rhythmic patterns. The primer level of the series introduces a relatively smaller number of rhythmic patterns than the series, with the most rhythmic patterns composed of a combination of two rhythmic concepts. The number of rhythmic patterns considerably increases in Level 1, but two rhythmic concept patters are the most common. However, *Level 2A* and *Level 2B* contain more rhythmic patterns with a combination of three concepts, and an increase in four rhythmic concept patterns.

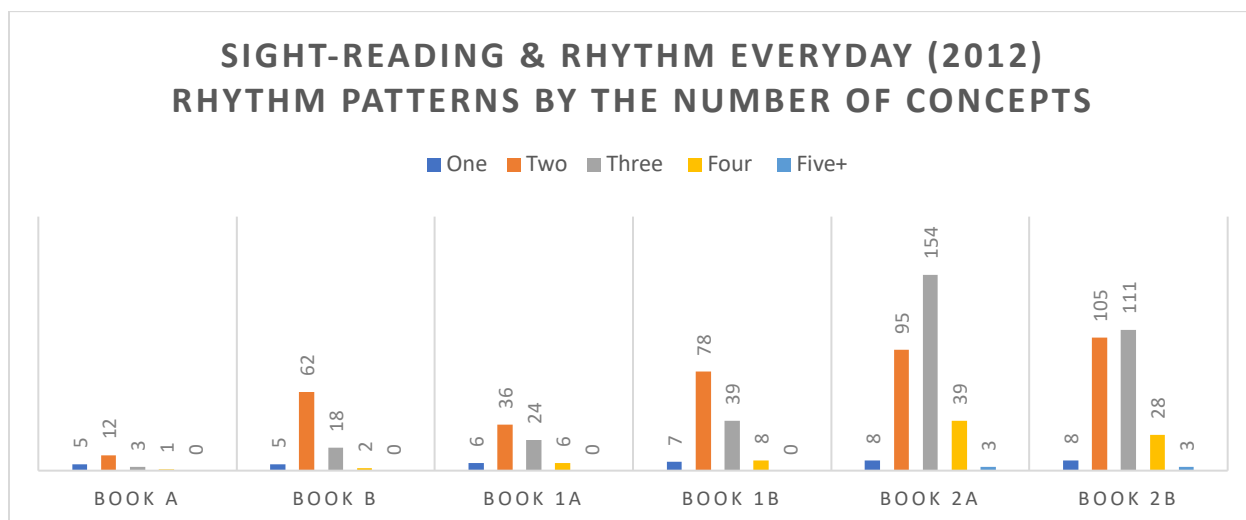


Graph 52) The number of rhythmic patterns by the number of concepts, Piano Adventure: Sight-Reading (2011) series

E. Sight-Reading & Rhythm Every Day (2012): Book A, Book B, Book 1A, Book 1B, Book 2A, Book 2B

The six levels of *Sight-Reading & Rhythm Every Day* series facilitate music reading skill improvement up to the late beginner level, presenting a total of 637 rhythmic patterns *Book A*, equivalent to the primary level of the other series, introduces rhythmic patterns including quarter notes, half notes, dotted half notes and whole notes in 4/4 or 3/4 meters, where the majority of rhythmic patterns are patterns with two rhythmic concepts. Although *Book B* introduces a single rhythmic concept, the quarter rest, the number of patterns with the two concepts is greatly increased. From *Book A* to *Book 1B*, rhythmic patterns combining two concepts are the most

common, even though the actual number of patterns differs between levels. Interestingly the number of patterns with two concepts is incongruent between levels, while the number of patterns with three concepts increases as the series progresses. *Book 2A* and *Book 2B* demonstrate the greatest number of patterns with three rhythmic concepts and includes a substantial growth of patterns with four concepts. Except a few patterns with more than five rhythmic concepts found in the later levels, most rhythmic patterns are within the range of one to four concepts, with most patterns composed of two or three rhythmic concepts.

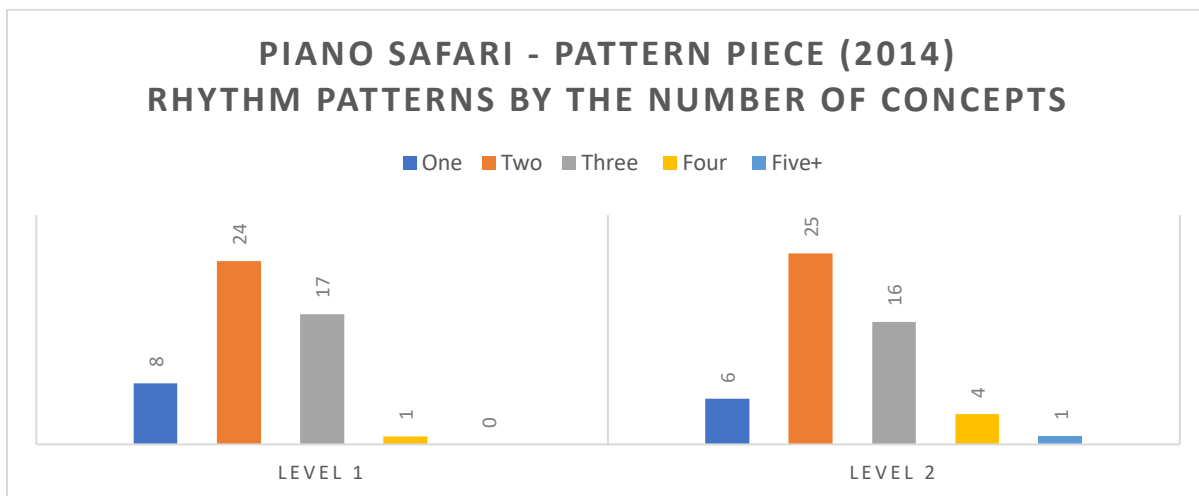


Graph 53) The number of rhythmic patterns by the number of concepts, *Sight-Reading & Rhythm Every day (2012)* series

F. *Piano Safari Pattern Piece books (2014): Level 1, Level 2*

The *Piano Safari Pattern Pieces* introduces a total of 88 rhythmic patterns between *Levels 1* and *2*. Unlike the other sight-reading series which provide multiple exposure to various patterns for practice, the goal of this series is to encourage learners to memorize and recognize patterns and related technical physical gestures when reading notes (Level 1, p.3). Therefore, the series utilizes practice pieces consisting of simple rhythmic patterns with melodic patterns and their sequences without any conceptual explanations or separate sections for rhythmic patterns.

This series, associated with the *Piano Safari* method book series – repertoire books, integrates rhythmic concepts from the method books for students to practice, forming various rhythmic patterns. Patterns with two rhythmic concepts are the most common in both *Levels 1* and *2*, with both patterns containing similar numbers of two-rhythmic pattern concepts. Between the two levels, three-rhythmic concept patterns are similar in occurrence, however, *Level 2* includes more elaborate rhythms with four or more concepts.



Graph 54) The number of rhythmic patterns by the number of concepts, *Piano Safari Pattern Piece Book (2014)* series

G. *How to Blitz Sight Reading (2016): Book 1.*

Book 1 from the *How to Blitz Sight-Reading* series aims to improve sight-reading skills for primer to grade 2 level. This book introduces a total of 140 rhythmic patterns. Half of the units in *Book 1* incorporates lessons focusing on introducing meters, rhythmic concepts of notes and rests, and ties, while the remaining units contain exercises integrating rhythmic and melodic patterns. Like other sight-reading book series, this series displays rhythmic patterns and drills

contain a larger number of rhythmic patterns with three and four concepts in the first book of the series, while sight-reading book series associated with method book series display a gradual increase in the number of larger sized rhythmic patterns as the series progresses. Overall, rhythmic patterns with two or three concepts are the most common in all series, with larger size patterns appearing as levels progress.

1.3. Frequency of the reinforcement

To determine how frequently patterns are reinforced within the analyzed materials, two procedures were used. The first procedure investigates how many melodic and rhythmic patterns are repeated as the level progresses by counting the number of patterns that appear in the previous level(s). The second procedure concentrates on the melodic patterns introduced in the method book series, inspecting the number of instructions given to students to recognize certain melodic patterns within a level.

1.3.1. Pattern Reinforcement by the progress of levels

1.3.1.1. Melodic Patterns

In Table 4, each level within each method book series is listed with the total number of melodic patterns introduced in each level, how many patterns are new to each level, and how many patterns are reintroduced from a previous level. The “New” column presents the number of new melodic patterns introduced at each level, while the “Previous” columns record the number of melodic patterns introduced in the previous level(s). For example, The *Music Tree* series introduces 18 melodic patterns in *Time to Begin*. In *Part 1*, 15 patterns from *Time to Begin* are repeated and an additional 19 melodic patterns are introduced. Then, in *Part 2A*, 13 patterns from

Time to Begin are repeated, providing a third reinforcement, only two patterns from *Part 1* are repeated, and ten new patterns are introduced. Finally, in *Part 2B*, sixteen melodic patterns from *Time to Begin* are presented again, however, only four melodic patterns introduced in *Part 2A* and *Part 1*, respectively, are reinforced. This result demonstrates that at least thirteen patterns from the first level in this series are included at all levels, while only a few patterns from *Part 1* and *Part 2A* are repeated in the following levels.

Method book	Level	Total	New	Previous	2nd Previous	3rd previous	4th Previous
The Music Tree (1951/2000)	Time to Begin	18	18				
	Part 1	34	19	15			
	Part 2A	25	10	2	13		
	Part 2B	46	22	4	4	16	
	Total	123	69				
Piano Discoveries (2001)	Prep (On-Staff Starter)	5	5				
	Level 1A	12	8	4			
	Level 1B	14	4	6	4		
	Level 2A	28	12	3	8	5	
	Level 2B	48	24	8	4	7	5
	Total	107	53				
Celebrate Piano (2003)	Book 1A	65	65				
	Book 1B	61	45	16			
	Book 2A	114	90	8	16		
	Book 2B	150	109	13	11	17	
	Total	390	309				
Piano Town (2004)	Primer	13	13				
	Level 1	15	2	13			
	Level 2	31	16	2	13		
	Total	59	31				
Alfred's Premier Piano Course (2005)	Book 1A	6	6				
	Book 1B	70	64	6			
	Book 2A	109	87	17	5		
	Book 2B	147	114	17	11	5	
	Total	332	271				
Music for Piano (1977/2006)	Kinder-Keyboard	10	10				
	Book 1	28	21	7			
	Book 2	44	24	12	8		
	Total	82	55				
	Preparatory	7	7				

Succeeding at the Piano (2010)	Gr. 1A	11	4	7			
	Gr. 1B	14	4	3	7		
	Gr. 2A	20	7	3	3	7	
	Gr. 2B	21	5	1	5	4	6
	Total	73	27				
Piano Adventure (1993/2011)	Primer	8	8				
	Level 1	14	6	8			
	Level 2A	31	17	6	8		
	Level 2B	34	14	6	6	8	
	Total	87	45				
Piano Safari (2014)	Level 1	7	7				
	Level 2	12	6	6			
	Total	19	13				
Interactive Piano (2016)	Book 1A	6	6				
	Book 1B	15	9	6			
	Book 2A	22	8	8	6		
	Book 2B	28	7	7	8	6	
	Total	71	30				

Table 4) The number of reinforced melodic patterns in each level from the method book series

In general, in method series which introduce a smaller number of melodic patterns, these patterns are more likely to be repeated at consecutive levels. For example, in the *Piano Town* (2004) series, all melodic patterns from *Primer* and *Level 1* are repeated in each consecutive level, providing reinforcement of pattern learning. While the *Piano Discoveries* (2001) series does not repeat all patterns introduced at each level in subsequent levels, the majority of the newly introduced patterns are repeated. For instance, The *Prep (On-Staff Starter)* level presents five melodic patterns, of which four are repeated in *Levels 1A* to *2B*. *Level 1A* introduces eight new patterns, of which six appear again in *Level 1B*, eight appear in *Level 2A* and seven are repeated in *Level 2B*. Therefore, most of melodic patterns from this series are reviewed in each progressive level.

On the other hand, when each level of the series contains a large number of melodic patterns, the patterns are rarely repeated. In these cases, each level introduces a large variety of melodic patterns, however, there is a limit to the number of repeated patterns, decreasing the

frequency of reinforcement, reducing the qualitative aspect of pattern recognition. For example, in the *Celebrate Piano* (2003) series, 65 melodic patterns are introduced in *Book 1A*, however, only 16 patterns are repeated in *Book 1B*. *Book 1B* introduces 45 new melodic patterns, but only eight patterns are reinforced in *Book 2A*. Comparing the number of new patterns introduced at each level and the number of patterns reviewed from previous levels, it is clear that this series concentrates on presenting new patterns rather than reviewing previously introduced patterns.

Interestingly, the *Piano Adventure* (1993/2011) series combines the introduction of a large number of patterns while providing opportunities for pattern reinforcement. *Levels 2A* and *2B* both repeat all eight patterns introduced in the Primer level and the six patterns introduced in *Level 1*, providing opportunities for reinforcement. However, of the 17 patterns introduced in *Level 2A* only six are repeated in *Level 2B*. Therefore, the *Piano Adventure* series reinforces patterns from earlier levels but concentrates on exposing students to larger number of melodic patterns at later levels with minimal repetition.

The method books reviewed in this analysis demonstrate three different styles of pattern reinforcement. One group of method books focuses on reinforcing pattern recognition through repeating a small number of patterns in each progressive level. Another group of method book series concentrates on introducing a large variety of patterns but limits the opportunity for review. Finally, one series attempts to combine the two methods, by introducing a smaller number of patterns in early levels which are repeated in all subsequent levels and introduces a larger number of patterns in later levels, with minimal reinforcement.

Table 5 presents the number of melodic patterns introduced and repeated in each level of the sight-reading book series. Unlike the method book series which presents a variety of

reinforcement styles, the sight-reading book series generally focus on introducing a larger number of melodic patterns with little to no reinforcement.

Sight-Reading book series	Level	Total	New	Previous	2nd Previous	3rd previous	4th previous	5th previous
Piano Sight Reading (2004)	Book 1	161	161					
	Total	161	161					
Alfred's Premier Piano Course: Sight-Reading (2005)	Book 1A	38	38					
	Book 1B	54	35	19				
	Book 2A	68	51	5	12			
	Book 2B	77	50	4	9	14		
Total	237	174						
Improve your Sight-Reading (2008)	Book 1	159	159					
	Book 2	152	97	55				
Total	311	256						
Piano Adventure: Sight-Reading (2011)	Primer	24	24					
	Level 1	103	85	18				
	Level 2A	165	119	29	17			
	Level 2B	164	113	12	23	16		
Total	456	341						
Sight-Reading & Rhythm Every Day (2012)	Book A	98	98					
	Book B	81	52	29				
	Book 1A	114	84	6	24			
	Book 1B	139	80	6	12	41		
	Book 2A	188	119	8	8	14	39	
	Book 2B	89	40	6	4	6	7	26
Total	709	473						
Piano Safari: Pattern Piece book (2014)	Level 1	47	47					
	Level 2	50	42	8				
Total	97	89						
How to Blitz Sight-Reading (2016)	Book 1	142	142					
	Total	142	142					

Table 5) The number of reinforced melodic patterns in each level from the sight-reading book series

Of the seven sight-reading book series, *Alfred's Premier Piano Course: Sight-reading (2005)*, *Improve your Sight-Reading (2008)*, *Piano Adventure: Sight-Reading (2011)*, *Sight-*

Reading & Rhythm Every Day (2012), and *Piano Safari: Pattern Piece* books (2014) consist of multiple levels, where the first level from each series introduces between 24 melodic patterns (*Piano Adventure Primer*) to 159 melodic patterns (*Improve your Sight-Reading Level 1*). One exception is the *Piano Adventure: Sight-Reading* series, where more than half of the melodic patterns introduced in the *Primer* level, continuously re-appear in *Levels 1, 2A* and *2B*. However, the melodic patterns introduced in the other levels are rarely repeated.

1.3.1.2. Rhythmic Patterns

Table 6 lists the number of rhythmic patterns introduced and repeated in each level from the method book series.

Method book	Level	Total	New	Previous	2nd previous	3rd previous	4th previous
The Music Tree (1951/2000)	Time to Begin	29	29				
	Part 1	63	44	19			
	Part 2A	130	100	9	21		
	Part 2B	180	140	16	8	16	
	Total	402	313				
Piano Discoveries (2001)	Prep (On-Staff Starter)	26	26				
	Level 1A	77	55	22			
	Level 1B	103	61	19	23		
	Level 2A	123	60	24	16	23	
	Level 2B	138	85	3	20	11	19
	Total	467	287				
Celebrate Piano (2003)	Book 1A	39	39				
	Book 1B	78	64	14			
	Book 2A	148	112	19	17		
	Book 2B	194	145	17	18	14	
	Total	459	360				
Piano Town (2004)	Primer	33	33				
	Level 1	78	57	21			
	Level 2	107	73	16	18		
	Total	218	163				
	Book 1A	28	28				

Alfred's Premier Piano Course (2005)	Book 1B	85	60	25			
	Book 2A	135	94	16	25		
	Book 2B	163	120	9	13	21	
	Total	411	302				
Music for Piano (1977/2006)	Kinder-Keyboard	44	44				
	Book 1	80	63	17			
	Book 2	141	96	21	24		
	Total	265	203				
Succeeding at the Piano (2010)	Preparatory	32	32				
	Gr. 1A	81	66	15			
	Gr. 1B	90	58	19	13		
	Gr. 2A	156	126	3	18	9	
	Gr. 2B	163	121	12	7	13	10
	Total	522	403				
Piano Adventure (1993/2011)	Primer	24	24				
	Level 1	85	68	17			
	Level 2A	124	96	15	13		
	Level 2B	149	94	18	24	13	
	Total	382	282				
Piano Safari (2014)	Level 1	61	61				
	Level 2	159	129	30			
	Total	220	190				
Interactive Piano (2016)	Book 1A	42	42				
	Book 1B	112	96	16			
	Book 2A	192	154	15	23		
	Book 2B	193	140	20	10	23	
	Total	539	432				

Table 6) The number of reinforced rhythmic patterns in each level from the method book series

This analysis demonstrates that most series focus on introducing new rhythmic patterns instead of reviewing patterns from previous levels. In addition, as the levels of the series progress, a fewer number of rhythmic patterns from earlier levels are presented for review. However, some of the method book series repeat a large number of the rhythmic patterns introduced in the first level throughout the series. For example, in *The Music Tree* series, *Time to Begin* introduces 29 rhythmic patterns, more than half of which are repeated in *Parts 1, 2A* and

2B, while few rhythmic patterns in *Part 1* are repeated in *Parts 2A* and *2B*. Similar to the *Music Tree* series, the *Piano Discoveries* series introduces 26 rhythmic patterns in the *Prep (On-Staff Stater)* book, of which approximately 20 rhythmic patterns are repeated in each consecutive level; however, only 19 of the 55 new patterns in *Level 1A* are included in *Level 1B*. The *Alfred's Premier Piano Course* series also shows a similar paradigm, where more than 20 of the 28 rhythmic patterns introduced in the first level of the series are repeated in *Levels 1B, 2A* and *2B*. Overall, the quantity of new rhythmic patterns from the method book series increase as more rhythmic concepts are introduced and new combinations can be formed, however, few rhythmic patterns are repeated in subsequent levels. Nevertheless, some method book series consistently repeat more than 50% of the rhythmic patterns introduced in the first level in each following level.

Table 7 displays the number of rhythmic patterns in each level from the sight-reading book series and shows the limited number of rhythmic patterns duplicated in each level. Most rhythmic patterns in the *Primer* level from the *Piano Adventure: Sight-Reading* (2011) series are included in the succeeding levels and approximately 50% of rhythmic patterns in *Book 1A* from the *Alfred's Premier Piano Course: Sight-Reading* (2005) series are repeated in the subsequent levels. Interestingly, the rhythmic patterns introduced in the second level of both series are rarely reiterated in the third or fourth levels.

Sight-reading book Series	Level	Total	New	Previous	2nd previous	3rd previous	4th previous	5th previous
Piano Sight Reading (2004)	Book 1	133	133					
	Total	133	133					
Alfred's Premier Piano Course: Sight-reading (2005)	Book 1A	42	42					
	Book 1B	65	36	29				
	Book 2A	74	45	7	22			
	Book 2B	74	49	2	4	19		

	Total	255	172					
Improve your Sight-Reading (2008)	Book 1	122	122					
	Book 2	188	130	58				
	Total	310	252					
Piano Adventure: Sight-reading (2011)	Primer	18	18					
	Level 1	85	69	16				
	Level 2A	125	92	23	10			
	Level 2B	142	75	29	25	13		
	Total	370	254					
Sight Reading & Rhythm Every day (2012)	Book A	21	21					
	Book B	87	71	16				
	Book 1A	72	45	9	18			
	Book 1B	132	84	6	25	17		
	Book 2A	299	262	10	1	12	14	
	Book 2B	255	154	50	16	2	20	13
	Total	866	637					
Piano Safari: Pattern Piece book (2014)	Level 1	50	50					
	Level 2	52	38	14				
	Total	102	88					
How to Blitz Sight Reading (2016)	Book 1	140	140					
	Total	140	140					

Table 7) The number of reinforced rhythmic patterns in each level from the Sight-reading book series

1.3.2. Melodic pattern reinforcement in each level from the method book series

While the previous analysis investigated the reinforcement of both melodic and rhythmic patterns between each level, this section discusses the reinforcement of melodic patterns within a level from each method book series. The melodic patterns presented with a name, label, or other indication, such as fingering, are analyzed on the frequency by which the instruction/indication marking the pattern reappears within a single level of the method series books; for example, the number of times a student's attention is drawn to recognize an interval 2nd within a level. The

purpose of this analysis is to analyze how often a series uses literal reminders to demarcate different melodic patterns at each level.

A. The Music Tree (1951/2000): Time to Begin, Part 1, Part 2A, and Part 2B.

The *Music Tree* presents patterns with intervals, chords, and a series of finger numbers. Analysis reveals that this series frequently reminds students of intervals, however many finger number patterns are neglected after the initial introduction. For example, most of the patterns identified by finger numbers are rarely denoted after their first appearance, while the interval 3rd is indicated six times in *Time to Begin*. Similar to intervals, chords and scale-related melodic patterns are also identified more than once. *Part 2A* contains a review of intervals and guides learners to identify and remember chords and scale related melodic patterns, such as major and minor triads and five finger scales. In addition, some melodic patterns with special names, such as “Frolic” (Part 2B, p.4) or “High Dive” (Part 2B, p.4), are referenced whenever new keys are introduced in *Part 2B* (see Appendix C-1).

The series provides multiple instructions to identify or recognize different intervals, creating small-size melodic patterns. Melodic patterns associated with keys, chords and scales, are easier to identify and the series provides more directions on reviewing these patterns. Some patterns are given a special term or name, such as “Frolic” and “High Dive”, and the patterns are indicated repeatedly and are shown in multiple keys. However, a few patterns with finger numbers are displayed more than once even though the series introduces many patterns with finger numbers.

B. *Piano Discoveries (2001): On-Staff Starter, Level 1A, Level 1B, Level 2A, Level 2B*

The *On-Staff Starter* of the *Piano Discoveries* series introduces three fundamental pattern concepts: repeat, steps (2nd), and skip (3rd). Since this level concentrates on introducing note names, each concept appears only once except skip (3rd), which is denoted twice.

Similar to the *Music Tree* series, the *Piano Discoveries* series identifies melodic patterns with the conventional pattern concepts - intervals, chords, and scales.

Additionally, some short melodic patterns

appear as warm-up patterns prior to practice pieces (Figure 18). Although the series utilizes instructions to review intervals, 5-finger scales, and chords, other melodic patterns are generally presented without additional indications. For example, *Level 1A* displays melodic and harmonic intervals up to the 5th, 5-finger scales, and other melodic patterns with a combination of leaps and repeats. While intervals and 5-finger scale are re-addressed two to five times, the other melodic patterns only appear once without further instructions to identify additional appearances. When *Level 2B* presents chords, inversions, major scales, and other patterns, such as the boogie-woogie pattern, most of patterns are only marked once, while commonly used chords, triads, inversions, and major scales are denoted multiple times. In summary, this series guides students to recognize a few melodic patterns, represented by intervals, chords, and scales, but no further reminders are utilized for other melodic patterns (See Appendix C-2).

20

Discovering Intervals and 2nds

An interval is the distance between two notes. An interval of a 2nd is just like a step: side-by-side notes on the keyboard and the staff. A second is always line note to next space note, or space note to next line note. Seconds may move up or down.

2nd 2nd

2nd 2nd

"2nd" Warm-Up

1

Sec-onds go up. sec-onds go down. Sec-onds go up. sec-onds go down.

2

Figure 18) Warm-up patterns, Level 1A from *Piano Discoveries (2001) p.20*

C. *Celebrate Piano (2003): Book 1A, Book 1B, Book 2A, Book 2B.*

The *Celebrate Piano* series develops patterns specifically to assist in learning intervals, providing instructions and reviews for the patterns. For example, *Book 1A* contains a Middle C pattern, “Busy Bee” (p.36) which focuses on the interval 2nd, and “Cuckoo bird” (p.62), which is to assist in learning the interval 3rd. Although these patterns are only presented in *Book 1A* once, they are denoted multiple times in *Books 1B, 2A, and 2B*. Unlike the previously discussed method book series, which provide instructions on reviewing intervals, chords, and scales, this series consistently reviews interval patterns instead of individual intervals, chords, or scales. While the series introduces intervals, chords, scales, some ostinatos, and various combinations of melodic patterns, these patterns are only denoted once without additional review. Therefore, most melodic patterns are addressed only once, and no instruction is provided as a reminder, except for special interval pattern pieces, which are frequently demarcated for recall (See Appendix C-3).

D. *Piano Town (2004): Primer, Level 1, Level 2*

The *Piano Town* series introduces the concepts of melodic patterns, such as intervals, and includes questions and directions for students to recognize these patterns in the practice pieces. For example, the *Primer* level presents intervals up to the 5th and includes questions about identifying intervals as groups of two notes and pitches. Students are directed by at least three questions to identify each interval introduced. *Level 2* expands to include chords and scales, where students are asked to find and identify most of these melodic patterns within the practice pieces within different keys. Compared with other method book series, the *Piano Town* series concentrates on melodic patterns related to conventional concepts, such as intervals, chords, and

scales, which have a clear term or name for easy reference (See Appendix C-4). Also, this series utilizes questions as guides for the identification of previously introduced melodic patterns. Even though the number of questions for each melodic pattern is not large, the series attempts to provide consistent cues to recognize a group of the notes related to conventional concepts for patterns.

E. Alfred's Premier Piano Course (2005): Book 1A, Book 1B, Book 2A, Book 2B

The *Alfred's Premier Piano Course* series introduces intervals, a group of two pitches, and expands the concept to chords and scales. This series also includes elaborate melodic patterns, such as combinations of the melodic 5th and harmonic 5th, and a series of three step motions, combinations of steps and skipping motions, through sections separate from the practice pieces. Often patterns are presented and reviewed in the “work out” sections (Figure 19) or sight-reading



Figure 19) Work out section, Book 2A from Alfred's Premier Piano Course (2005) p.6.

activities (Figure 20) in each unit. In this series, only a few melodic patterns are demarcated two

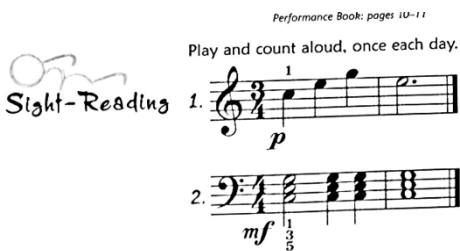


Figure 20) Sight-Reading section, Book 2A from Alfred's Premier Piano Course (2005) p.15

or three times, most are only presented once (See Appendix C-5). For example, *Book 2B* introduces different types of melodic patterns but only two, five-finger major scales and five-finger minor scales, are denoted twice.

F. Music for Piano (1977/2006): Kinder-Keyboard, Book 1, Book 2

The *Music for Piano* series presents melodic patterns in a unique way, introducing accompaniment patterns, such as Alberti patterns, and concepts of ostinato early on. For example, beyond the theoretical terms of melodic patterns, such as intervals, chords, or scales, the series provides new names for different types of melodic patterns based on the behaviour of the patterns. *Book 1* presents four unique patterns: “skips and steps” (p.4), “swinging” (p.5), “old woman” (p.6), and “old man” (p.7), displaying the pattern variations with instructions for students to recognize differences between the original pattern and its variation. However, these patterns are only denoted once, with no instructions provided to identify these patterns later within the same level or in the next level, even if parts of the pattern appear in other practice pieces (See Appendix C -6). Overall, the patterns from this series are accompanied with few instructions for learners to remember and recognize pattern concepts.

G. Succeeding at the Piano (2010): Preparatory, Grade 1A, Grade 1B, Grade 2A, Grade 2B

Although the *Succeeding at the Piano* series presents a smaller number of melodic patterns with specific concepts, names, or labels compared to other method book series, this series includes more instructions for the recognition of featured patterns. For example, the *Prep* level introduces six intervals, with each interval denoted twice or more within the level, for example the pattern of the interval 2nd is restated six times, the interval 3rd is mentioned five times, and the interval 5th is demarcated four times (See Appendix C-7). Interestingly, the analysis demonstrates which melodic pattern(s) are prioritized at each level. The *Prep* level focuses on teaching students to recognize the interval 2nd, while the *Grade 1A* level spotlights

the interval 3rd. The *Grade 1B* levels promotes major triads, as the *Grade 2A* levels emphasizes awareness of major five-finger scales and the *Grade 2B* level highlights the I-V7-I pattern and full major scales. Therefore, this series includes several instructions used to discern certain melodic patterns in each level, whereby half of the melodic patterns are mentioned at least twice.

H. Piano Adventure (1993/2011): Primer, Level 1, Level 2A, Level 2B

The *Piano Adventure* Series emphasizes step and skip motions in the *Primer* level and *Level 1*. *Level 1* introduces both melodic and harmonic forms of the intervals, but additional instructions are only provided for the recognition of melodic 2nd and 3rd. As *Level 1* establishes the concepts of chords, triads, and scales, and includes multiple instructions guiding students to identify these patterns within practice pieces. Some of the patterns in *Level 2A* are identified with a description of melodic contour following the introduction of the phrase mark, and *Level 2A* also contains marked accompaniment patterns, such as the “boogie pattern” (Level 2A p.44). However, while the patterns are labelled for easy reference in future contexts, the series rarely re-addresses these patterns after the initial introduction. Concentration on developing a sense of chords and scales, *Level 2B* provides multiple opportunities for students to recognize and recall chords, some chords progressions, and scales. Hence, the *Piano Adventure* series focuses on reinforcing knowledge of the conventional pattern concepts, while other types of melodic patterns, with or without labels related to theoretical terms, are only introduced once with no reinforcement (See Appendix C-8).

I. Piano Safari (2014): Level 1, Level 2

The *Piano Safari* series introduces only a few melodic patterns at both levels within the series, with a focus on recognizing the interval 2nd and 3rd and expanding to include the interval 4th and 5th in *Level 2*. Although the series contains various exercises and playing activities with the purpose of developing aural and kinesthetic senses and experiences, the concepts and names for melodic patterns are presented later in the level instead of displaying the concepts and exercises together. Since the series is organized to promote teaching by rote, the number of instructions and reminders about reading the melodic patterns appear after the concepts are introduced. Both levels include a strong reinforcement of the interval 3rd, with the interval 2nd also receiving strong emphasis (see Appendix C-9). Thus, the series emphasizes the establishment of a solid foundation for reading the interval 2nd and 3rd, however, this series provides limited instructions for other melodic pattern concepts.

J. Interactive Piano (2016): Book 1A, Book 1B, Book 2A, Book 2B

The *Interactive Piano* series principally introduces intervals, a series of steps from three steps to five-finger scales, and chords. This series tends to include more instructions for the recognition of triads, chords, and scales in different keys, however, this series fails to reinforce interval instruction. *Book 1A* and *1B* present the concept of intervals up to the 5th, however, each interval is only explained once with no additional instructions given. *Book 2A* concentrates on reviewing and expanding various intervals, so each interval is identified at least twice in this level. Guidance to identify fundamental major and minor triads in both the broken and blocked form are present in *Book 1B* twice, two or three times in *Book 2A* and two to four times in *Book 2B*. Other forms of chords are only introduced once. Hence, this series reinforces the

introduction of primary chords and scales established in *Books 2A* and *2B*, however, limited instructions are included for other melodic pattern concepts, such as intervals (see Appendix C-10).

Of the method book series analyzed, some of the series chose to introduce fewer melodic pattern concepts while providing numerous reinforcement opportunities to identify patterns, which aids in building knowledge and understanding of these concepts. Other method book series chose to present a greater number of melodic patterns with or without definitions and generally providing less reinforcement, focusing instead on exposing students to a broader range of melodic concepts at the risk of sacrificing knowledge building and understanding. In general, melodic patterns with definitions, names, or labels are more inclined to be reinforced than undefined patterns. Also, most of the defined melodic patterns are based on the conventional pattern concepts, such as intervals, chords, or scales, limiting the identity and reference to more elaborate melodic patterns formed by a combination of mixed intervals or modified chords. Moreover, depending on the focus of each level and the core approach of each series, some melodic patterns are emphasized over other patterns, for example, some method book series contain expanded instructions for recognizing intervals, while other series provide more reinforcement for chords or scales.

2. Qualitative Analysis: Instructions and Visual cues

While the quantitative analysis investigated the number, size and frequency of patterns and their associated instructions, this section discusses how each method book series and sight book series approaches the concept of patterns and what types of verbal instructions facilitate the

grouping of musical notes. Additionally, this section explores the use of visual cues to trigger the formation of a pattern and bridge between pattern recognition and physical movements.

2.1. Method book Series

A. The Music Tree (1951/2000): Time to Begin, Part 1, Part 2A, and Part 2B.

Instructions and Concepts for Patterns

The *Music Tree* series uses the term “grouping” from the beginning of *Time to Begin* (p.4). *Time to Begin* first presents the concept of repeats, steps, and skips before introducing staff and lines, only once the size of the intervals expands the lines and staff gradually appear. When steps and skips are indicated, the series displays the repeated patterns that are consisted of two pitches with steps or skips. Although the series presents various patterns combining 2nd and 3rd intervals, each pattern is only indicated by the interval and no other instructions or labels are provided. As the series progresses through *Part 1*, *2A*, and *2B*, more intervals are introduced and the concept of keys, scales and chords is developed, though the recognition of intervals is continuously emphasized. In addition, the series introduces the patterns, “Frolic” and “High Dive” (Part 2B, p.4), as a method to practice intervals and a full scale, with these two patterns appearing each time a new key is introduced. In addition, these patterns are accompanied with fingering to assist in playing the instrument. However, these patterns are less associated with the practice pieces and any labels or names for the patterns are unspecified, whereby most of the instructions concentrate on recognizing the key signature and different intervals (e.g., Part 2B p.27, p. 28)

For rhythmic patterns, the series introduces one concept at a time but creates rhythmic drills combining new concepts with previous concepts. Each unit allocates sections for

specifically learning and practicing rhythmic patterns, which are usually the length of one or two measures.

Visual Cues

Before placing notes on lines and the staff, Time to Begin groups notes by leaving spaces between each group and placing the notes in different vertical distances to indicate registers (Figure 21). Later in the book, the slur is presented and used to define and group notes into phrases, as well as direct legato

playing (Time to Begin, p.22). Fingering is used as a signal for finger movement and as a mechanism to determine patterns that are unspecified and unconventional

(Figure 22). After the presentation of several keys and five-finger scales in Part 2A, an alert sign, a new unique visual cue, appears, indicating the student needs to move and place their hands in a new position (Figure 23). This sign continues appearing Part 2B to assist in preparing



Figure 21) Visual grouping by different vertical levels, Time to Begin from The Music Tree (2000) p.4.

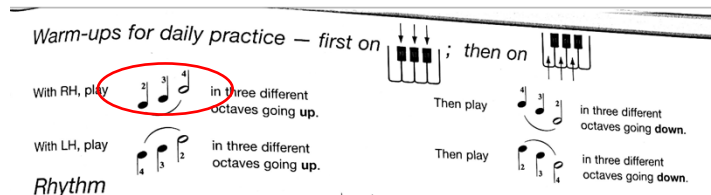


Figure 22) The fingering cue for a pattern, Time to Begin from the Music Tree (2000) p.37.



Figure 23) Alert sign cue to move a new hand position, Part 2A from the Music Tree (2000) p.13.

hand positions to play groups of notes within the five-finger range in different places or different keys.

B. Piano Discoveries (2001): On-Staff Starter, Level 1A, Level 1B, Level 2A, Level 2B

Instructions and Concepts for Patterns

The first level of the *Piano Discoveries* series, *On-Staff Starter*, sets the foundation for music reading by coaching students to recognize the fundamental pattern concepts - repeats, steps, and skips, and in the introduction of note names. In this level, melodic patterns are developed based on the introduced notes and designated by the note names, like “C-D pattern” or “C-B patterns” (*On-Staff Starter*, p.12), or the pattern is described in terms of its motion, such as the “up-down-up” pattern (*On-Staff starter*, p.24-25). *Level 1A* presents individual notes on the bass staff, the concept of intervals, and different hand positions based on different keys, such as the C position and the G position. Intervals are displayed with a couple of warm-up patterns, and restated separating melodic and harmonic intervals. As the level develops, the series continues to present notes in different positions, expands into larger interval ranges, and introduces chords and scales, which is the conventional method of melodic pattern introduction as observed in other method series. Even though the practice pieces in this series are often composed to easily distinguish melodic patterns with a length of two or four measures, the series excludes any type of pattern conceptualization or visual instructions to direct grouping. Moreover, the patterns in this series are often displayed for the purpose of technical exercises but are not connected to a reading activity.

Rhythmic concepts are introduced singularly and are built upon each other as the series progresses. Additionally, rhythmic patterns and rhythmic related concepts, such as anacrusis and

syncopations are presented separately from practice pieces within the activity sections of every unit (Level 2A, p.15, p.21; Level 1B, p. 44) Overall, the series introduces the main conventional forms of melodic patterns but does not provide further instructions to promote pattern reading or recognizing melodic pattern concepts.

Visual Cues

A slur and its concept are presented in *Level 1A*, focusing on the function of connecting and playing legato and displays the large size of grouping by a slur. Although the phrase mark is a good indication of the group of notes, it is applied without considering of the size of the patterns nor developing the pattern recognitions in this series. Fingering is another indication for patterns for some method book series, but this method book provides some fingerings to link each note, not to build a pattern, that applies throughout the practice piece. However, as the series introduces the primary chords in *Level 2B*, displays Roman numeral chord symbols on the practice piece with the specific instructions to recognize the chords.

C. Celebrate Piano (2003): Book 1A, Book 1B, Book 2A, Book 2B.

Instructions and Concepts for Patterns

The *Celebrate Piano* series covers conventional music patterns such as intervals, scales, and chords in different keys, combining the middle C and intervallic approaches. In the first level, the series introduces middle “C” but reading focuses on intervals. The series displays the interval 2nd and 3rd from middle C and presents the landmark notes to promote transposition activities. This series strongly emphasizes the recognition of patterns. The concept of patterns is introduced early in the first level, *Book 1A*, and the pattern recognition is reminded by the

specific instructions. For example, every practice piece includes instructions to recognize and identify intervals, patterns, or phrases before learning and playing the piece. The series provides definitions about “repeated patterns” and “phrases”. According to this series, “repeated patterns” are “a group of notes [that] can form a pattern” (Book 1A, p.44) and “phrases” are “a group of notes” (Book 1A, p.34). These two definitions underscore the differences between patterns and phrases and providing learners with an idea of what they need to look for in the practice pieces. However, the series uses the term, “five-finger pattern” very widely from referring five-finger scales and root position triads, to any possible fingering patterns that are formed within the range of five fingers, which diminishes the purpose of labelling.

In addition, the series uses names for short patterns with intervals, for example, “Busy Bee Song” is a pattern consisting of the interval 2nd and a series of motions. Similar to the “Busy Bee Song”, each interval up to an octave is accompanied with its own pattern songs with animal names. These animal titles for the interval patterns create a mnemonic for remembering intervals and patterns and provides a label which can be referenced when the pattern appears in practice pieces or other interval patterns. However, the series uses this naming technique for groups of two pitches (i.e., intervals) only. This technique could have been useful for larger patterns grouping three or four notes based on melody behaviour, e.g., neighbour motions, which would assist in grouping larger number of notes and recognizing expanded repeated patterns beyond intervals. Besides interval songs, pattern learning sections from each unit build up the number of patterns students are exposed to in the practice pieces. One of these patterns is composed of three ascending stepping notes, the series names this pattern “Walk-a-bout” (Book 1A p.21), which promotes grouping these patterns and provides a title for future reference.

Unfortunately, the series does not name other patterns or provide identifiers or descriptors for future reference.

While most of the other methods book series examined introduce only one rhythmic concept at a time, *Celebrate Piano* displays multiple rhythmic concepts together, which enhances the sense of rhythms by comparing the relative time values among the rhythmic concepts.

In summary, the *Celebrate Piano* series attempts to present the concept of intervals in an extended manner, introduces patterns with creative titles and calls students to attend to different patterns. In addition, rhythmic concepts are presented using patterns combining two or more rhythmic concepts. However, the series does not contain specific concepts or mechanisms to trigger the chunking process, which would be useful for establishing systems to group, identify, and name unidentified non-conventional patterns with three or four notes.

Visual Cues

Prior to introducing the slur, a phrase mark, this series displays a group of notes by leaving a large space between groups (Book 1, p.31, 32, and 34). This space creates a visual pause between the group of notes. As the books progresses, the phrase mark is used to group notes based on musical phrasing. When the series introduces the concept of the “repeated pattern”, repeated patterns from the practice piece are circled and learners are asked to find the patterns and circle them (Book 1A p.44). This activity initiates the chunking process by encouraging self-awareness about patterns within the pieces and creates visual indications of the patterns. In this series, the fingering is also used to aid in grouping notes. Fingering appears only for the first note of the phrase, positioning the student’s hand for proper positioning to play notes within the five-finger range. Although fingering is not used for actual patterns and repeating

numbers like a pattern, it aids in preparing the student to play a range of patterns. Among the four visual cues used in this series, circling repeated patterns is probably the most effective at establishing pattern recognition as this cue prompts learners to perceive patterns for themselves. Other visual cues, such as the empty space, phrase marks, and fingerings are useful for visually grouping notes, however, these cues might not be as effective, depending on the type and size of the pattern.

D. Piano Town (2004): Primer, Level 1, Level 2

Instructions and Concepts for Patterns

The *Piano Town* series presents two questions for the purpose of grouping notes as a chunk prior to the introduction of any concepts for building melodic patterns. The first question asks students to compare the similarity and differences between measures, while the second question asks students to identify the direction by which the melody is moving (up or down) and to what degree (by steps or skips). The *Primer* level presents the concept of the interval 2nd and 3rd, and the two questions are presented to identify both the direction and the intervals. As the level progresses, the series introduces the remaining intervals, scales, and primary chords in different keys. This series prompts students to identify intervals, chords or scales previously presented, or asks students to distinguish similar or different measures on each page and in every new practice piece. The word “pattern” often appears with regards to rhythmic patterns, and instructions directing students to find rhythmic pattern or distinguish similar and different patterns are present within this series. Therefore, most melodic patterns in this series are referred to as intervals, chords, or scales, while rhythmic patterns are generally referred to as a pattern, without specific names or definitions. To promote chunking behaviour, the series consistently

asks students to recognize melodic or rhythmic patterns, however, no instructions are included to aid students in forming patterns and no definitions are given for non-conventional groups of notes not defined by theoretical terms.

Visual Cues

The series utilizes three visual cues to trigger possible chunking behaviours in reading music and linking physical movements to playing the piano. The first visual indication, which appears in the *Primer* level, is a slur.

While the slur is an obvious choice of a visual cue to group notes and form a pattern, slurs are also used to indicate long phrases, requiring extra steps to break down the longer phrase into smaller chunks. The second visual cue used in this series, is the use of fingering, indicating the finger numbers to play which

notes. Fingering facilitates the connection between reading and playing, especially in non-conventional patterns, where fingering directs which fingers to play which notes (Figure 24). The last visual cue used in this series is the roman numeral symbol for the harmonic chords.

Following the introduction of primary chords, the chord symbols are incorporated into the practice pieces (Figure 25). This visual cue is useful to establish the recognition of harmonic patterns and harmonic progressions. Since roman numerals provide a clear definition for each

Identical Twins
Warm-Ups

With cheerful energy

mf Side by side we grow up to -geth - er, In both sun -ny and storm -y weath -er

The image shows a musical score for a piece titled "Identical Twins" from the "Warm-Ups" section. It includes a piano illustration of two identical twins. The score is in 3/4 time and features a melody with various fingering numbers (1, 2, 3, 4, 5) placed above the notes. A slur is used to group a sequence of notes. The lyrics are: "Side by side we grow up to -geth - er, In both sun -ny and storm -y weath -er".

Figure 24) Fingering cue for the pattern, Level 2 from *Piano Town* (2004) p.14

Rolling Marbles

Write chord names in the boxes.
Write Roman numerals on the lines.

Line 1 is exactly like line: 2 3 4

The image shows a musical score for a piece titled "Rolling Marbles". It includes instructions: "Write chord names in the boxes. Write Roman numerals on the lines. Line 1 is exactly like line: 2 3 4". The score is in 3/4 time and features a melody with a slur. Roman numeral symbols (C and IV) are placed in boxes above the notes. The lyrics are: "Side by side we grow up to -geth - er, In both sun -ny and storm -y weath -er".

Figure 25) Roman numeral symbol, Level 2 from *Piano Town* (2004) p.19

chord across different keys, this cue is an important element to establish chunking processes in music reading.

E. Alfred's Premier Piano Course (2005): Book 1A, Book 1B, Book 2A, Book 2B

Instructions and Concepts for Patterns

The *Alfred's Premier Piano Course* series presents note names without placing them on a staff and introduces landmark notes on the staff. Music reading develops by steps from each landmark notes. The series attempts to introduce the fundamental concepts – repeat, step and skip, and the conventional pattern concepts – intervals, scales, and chords, gradually across the progressive levels. For example, *Book 1A* concentrates on building a sense of steps and skips before expanding upon these fundamental concepts using two pitches to include larger size patterns, specifically the five-finger scale with five notes and five pitches (expanded steps), and the triad arpeggio with three notes and three pitches (expanded skips). The intervals are introduced in *Book 1B* through *Book 2B*. *Book 1B* demonstrates intervals up to the 5th while *Book 2A* adds only the interval 6th and *Book 2B* introduces the final intervals, the 7th and 8th. Since many chords are built within the range of the interval 5th, *Book 2A* focuses more on establishing chords and scales, while *Book 2B* introduces minor scales and full scales. The series is organized to develop pattern concepts based on conventional patterns like intervals, scales, and chords, while also displaying non-conventional patterns with three or four notes in a separate section, such as the work out section. This section provides opportunities for students to be exposed to various patterns, however no label or identification strategy are used to analyze and group notes together in a pattern.

For rhythmic patterns, each level presents focused rhythmic patterns with one rhythmic

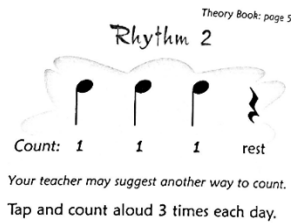


Figure 26) Labelling a rhythmic pattern, Book 1A from Alfred's Premier Piano Course (2005), p.8

concept introduced at a time. While rhythmic patterns are not labelled in most of the method and sight-reading book series analyzed in this thesis, the *Alfred's Premier Piano series*, at least in *Book 1A*, labels rhythmic patterns with

numbers, so learners can easily recall and refer to the rhythmic patterns when the patterns reappear in different

practice pieces (Figure 26).

This series focuses on developing and understanding conventional melodic patterns, however, no other system or identifiers are given for non-conventional patterns. While the series introduces various types of non-conventional patterns, it is not connected to future pattern reading when similar patterns appear due to lack of attention, analysis, and labelling to facilitate the chunking process. The numbering system for rhythmic patterns is practical for young beginner learners for remembering and recalling patterns effectively and for breaking down larger patterns composed of two or three rhythmic patterns. While the numbering of rhythmic patterns is discontinued after *Book 1A*, it provides an example for learners who could be encouraged to label rhythmic patterns and apply labels of their own for music reading.

Visual Cues

An obvious grouping cue is a slur or phrase mark. This series defines a phrase as “a group of notes, similar to sentence” and a phrase mark as a longer slur (Book 1B, p.25). In early levels, practice pieces consist of phrases within the five-finger range. When the hand position needs to relocate, the word “move” is present, prompting students to change the location of their

hands. This visual cue aids learners to prepare mentally and physically and predict movement within the piece before reading the patterns. This cue signals to the student that the upcoming notes will be within the range of five fingers. In *Book 2A*, fingering indications with a red circle specifies movement and which finger needs to press which key, providing slightly more guidance than specific fingering. Additionally, *Book 1A* utilizes the alternating hand positions (p.6) and vertical distances based on the register changes (p.8) which creates the visual grouping for the patterns before the staff is introduced. Overall, the series presents three main visual cues that may possibly assist in student's comprehending notes as a group. The slur forms the phrase, a group of notes, and the "move" cue and fingering direct physical movements, aiding in predicting the upcoming notes. Although these visual cues are useful indicators to recognize the patterns, they are not sufficient to initiate grouping notes to develop behaviour that gradually expands the scope of reading music.

F. Music for Piano (1977/2006): Kinder-Keyboard, Book 1, Book 2

Instructions and Concepts for Patterns

The *Music for Piano* series initiates music reading by learning note names and melodic shapes instead of reading musical notes on the lines and staff. Unlike other method book series, which introduce intervals and the grouping of two pitches, this series presents patterns with groups of three or four notes before introducing conventional concepts for the formation of patterns. In the first level, *Kinder-Keyboard*, the series presents three and four note patterns with repeat notes or steps, five-finger scales, called "Tune-up" (*Kinder keyboard*, p.30) in six different keys, and a left-hand ostinato pattern. The "Question and Answer" section (*Kinder keyboard*, p.25) consistently reviews the patterns with repeat and step motions.

Book 1 introduces named patterns and their variations, whereby the name of the pattern represents the motion, example the “up and down” pattern (Book 1, p.2) a five-finger ascending and descending scales, or the “Skips and steps” pattern (Book 1, p.4), a combination of either ascending skips and descending steps or vice versa. Moreover, the instruction encourages students to try these patterns in different keys. At this point, the series introduces patterns and sequences (Book 1, p.14) with directions on how to recognize the patterns. However, most of the patterns are formed by the fundamental pattern concepts and the instruction are also limited to recognizing fundamental pattern concepts such as repeats, steps, or skips. Then, the series concentrates on exploring chords, including their application to Alberti bass and other non-specified bass patterns.

Book 2 expands the scope of pattern recognition from identifying repeats, steps, or skips to finding sequences, repetitions, and inversions of the melodic pattern (Book 2, p.17). The chords are continuously explored with different forms, inversions, and chord progressions, including concepts of modes, diatonic scales, and various bass patterns and the concept of ostinato. Finally, the concept of intervals is addressed in *Book 2* after introducing various types of patterns, scales, and chords in multiple keys.

For rhythmic patterns, the series begins by presenting rhythmic values by length of blocks in the *Kinder-Keyboard*, with rhythmic concepts officially introduced in *Book 1*. Interestingly, *Book 1* explains several rhythmic concepts at the same time, (Book 1, p.9-10) reinforcing concepts through exposure to various rhythmic patterns. New rhythmic concepts are presented in conjunction with previously introduced rhythmic concepts as a form of rhythmic patterns (Book 1 p.20, p.32, p.34; Book 2 p.28).

The *Music for Piano* series approaches music reading by recognizing melodic shapes. The series, first, categorizes melodic shapes three fundamental patterns – repeat, step, and skip, and then demonstrates the concept of patterns, sequences, and their inversions. By combining two or three patterns, the series exposes students to a larger number of patterns with unique definitions, reflecting the form of the melodic patterns. The series also explores multiple keys and their associated chords early in the series, whereby students are encouraged to play different melodic patterns and harmonic chord progressions in different keys. In addition, this series introduces rhythmic concepts as a group, instead of singularly, which enlarge the scope of possible rhythmic patterns.

Visual Cues

The *Music for Piano* series initiates music reading with a unique approach. Before displaying musical notes on the lines and staff, or before explaining rhythmic values, *Kinder-Keyboard* visualizes melodic shapes by blocks, indicating pitch levels by the height of the block and rhythmic concepts by the width of the block (Kinder-Keyboard p.9). *Book 1* displays three visual cues to form melodic patterns. First, fingering with blocks evokes the image of the melodic patterns, “up and down”, “skip up and down”, “skips and steps”, “Swinging”, “Old woman”, and “Old man” (Book 1. p.3-7). This level then demonstrates the concepts of patterns and sequences by grouping them with brackets (Book 1. p.14) and introducing the phrase mark (Book 1. p.22). Among these three visual cues, phrase marks continue to group notes and fingerings guide the physical response to playing the piano, while brackets are utilized only temporarily to demonstrate patterns and sequences. This series introduces melodic shapes and patterns through the incorporation of creative visual cues. However, the visual cues are limited

with fingering and phrase marks when these conventional visual cues are demonstrated in *Book 1*.

G. Succeeding at the Piano (2010): Preparatory, Gr. 1A, Gr. 1B, Gr. 2A, Gr. 2B

Instructions and Concepts for Patterns

The “unit” practice (Grade 1B, p.12) is a unique and important feature of the *Succeeding at the Piano* series. This feature is used for practicing sight reading by playing a measure and the first downbeat of the next measure. This strategy assists in the development of chunking beyond a single measure by including an extra note into the group and breaking down long phrases into more manageable chunks. Other than this feature, the melodic patterns are established by introducing note names and intervals. While this series does not use the term “pattern” specifically, the instructions encourage note grouping with slurs from the beginning of the series. For example, the *Preparatory* book contains instructions for the identification of a group of notes, such as “circle the groups of repeated notes” (*Preparatory*. p.28, p.39), “circle all 3rds” (*Preparatory*. p.42), “Find 2nds” (*Preparatory*. p.57), or “Find the 5th” (*Preparatory*. p.63). Since the concept of a phrases and phrase marks are addressed in the *Preparatory* level, instructions guiding students to perceive longer patterns beyond two pitch intervals and notice the number of phrases or identify similar or different phrases are used in this series. As the level advances, the series emphasizes the recognition of guide notes (or landmark notes) and develops note names and reading interval at the same time. Gradually the series introduces different keys and their associated. From *Grade 2A*, the series introduces more patterns, using the term “five-finger patterns” to refer to any type of patterns within the five-finger range in a certain key, including five-finger scales, arpeggios, and any non-conventional patterns. The concept of ostinato is also

addressed at this level with the definition, “An ostinato is a short pattern that is repeated over and over again.” (Grade 2A p.30), and some bass patterns are presented as a variation of chords.

This series presents one rhythmic concept at a time, displaying a few rhythmic patterns with the newly introduced concept. Since the series integrates rhythmic patterns into the actual practice pieces without providing specific instructions or include a separate section to improve reading rhythmic patterns, external guidance is required to recognize and learn rhythmic patterns.

The *Succeeding at Piano* series approaches grouping notes with intervals and phrases, and establishes five-finger patterns such as scales, and chords, starting with I and V7 chords in multiple keys. Beyond the conventional pattern concepts used to determine melodic patterns, no other labels or identifications are shown to aid in the recognition of non-conventional melodic patterns. However, the series promotes chunking with a unique strategy, the “unit practice” encourages students to group notes across the bar line, which avoids students stopping at the end of every measure and may possibly improve reading fluency and note playing.

Visual Cues

This series introduces the slur early in the series and is used as a primary visual cue to group notes and indicate phrases. When chords are presented, brackets and arrows are used to facilitate the grouping of notes and to indicate blocked or broken chords (Grade 1B, p. 38). The series contains instructional cues to initiate technical movements such as “drop, then lift” or “push off the key with the wrist and forearm” (Grade. 2A p.23), however these instructions are limited to the direction of physical movements and are not related to reading notes and forming patterns. One cue, “move” (Grade 2B, p.31), plays a similar role to the alert signs from the *Music Tree* series, indicating students need to re-position their hands. Hence, the series displays the

phrase mark for the purpose of grouping notes in general, the brackets for the chords, and a written cue, “move” to initiate re-positioning the hands.

H. Piano Adventure (1993/2011): Primer, Level 1, Level 2A, Level 2B

Instructions and Concepts for Patterns

The *Piano Adventure* series emphasizes recognizing patterns from the very beginning, containing consistent instructions to recognize or find musical patterns. However, the series uses a vague definition of musical pattern and rarely uses terms or names for non-conventional melodic patterns. To conceptualize melodic patterns, the *Primer* level indicates patterns of repeated notes, steps, skips, and five-finger scales in C major. While some method book series present five-finger scales after introducing intervals, this series introduces the C major five-finger scale before establishing the concept of intervals. *Level 1* presents intervals up to the 5th, five-finger scales in different keys, and chords either triads or simplified forms such as a two-note form of V7. In *Level 2A*, the series attempts a unique approach to demonstrate melodic patterns by describing the imagery of the pattern. (Level 2A p.50-51). While *Level 2A* and *2B* introduces accompaniment ostinatos such as the Boogie pattern and Waltz chord progression, further processes to conceptualize patterns rarely occur despite the inclusion of frequent instructions for noticing patterns.

As other method book series, this series presents a single rhythmic concept at a time, combining newly introduced concepts with previously introduced concepts forming patterns with more than two concepts. This series encourages the recognition of patterns and establishes the terminology of intervals, chords, scales, arpeggio, and ostinato styles. In addition, the series uses descriptions to reflect the melodic shape of patterns. However, the series does not provide a

sufficient pragmatic strategy to gradually develop chunking behaviours through the recognition of smaller to larger patterns, beyond the use of conventional terminology to group notes.

Instructions for the recognition of patterns could alert students to perceiving notes as a group, however these instructions may not be easy to remember and recall in a new context.

Visual Cues

The concept of the slur, visually grouping notes together, is introduced at the beginning of *Level 1* concurrent with the introduction of the C major five-finger scale and the concept of legato playing (Level 1 p.10). In *Level 2A*, slurs form a pattern, along with descriptions to assist in visualizing musical shapes and providing definitions for future reference (p. 50-51). This series also uses the second visual cue of fingering notation. For example, patterns by fingering are often used as a warm-up activity (e.g., Level 2A p.20) and students are encouraged to play the patterns in transposed keys. The series also utilizes brackets as a visual cue to group the notes, especially chords (figure, Level 1 p.49). Roman numeral chord symbols support the recall of chords as a group instead of reading individual triads. Beside these visual cues, the series contains many instructions to guide reading as a group and moving as a sequence, like “move” (2B, p.33), “jump” (2B, p.45), “lift” (2B, p.46), “cross-over” (2B, p.46) and “echo” (2B, p.63). Although these cues are focused on movement, some of these instructions, such as “move” and “lift” and “echo”, indicate the beginning and end of phrases, which could assist in chunking behaviour by providing clues for the beginning and end of phrases. However, these visual cues appear randomly, instead of carefully utilized to establish reading behaviour. In summary, the *Piano Adventure* series utilizes slurs, fingering, brackets, short verbal commands, and the Roman numeral chord symbols to group notes and direct a physical response from the students.

Additionally, written commands are given to guide movements while playing the piano.

Although these visual cues have the potential to develop chunking, there is no indication that they were designed to promote pattern recognition or reading notes as a group.

I. Piano Safari (2014): Level 1, Level 2

Instructions and Concepts for Patterns

Level 1 of the *Piano Safari* series introduces note names and the interval 2nd and 3rd and focuses on learning fingering and intervals for the development of reading music (p.7). Like many of the other method book series, this series first presents three fundamental concepts: repeats, steps, and skips. Note names relative to C are the introduced and consecutively developed without using the staves or lines. When the staff and lines are introduced, the series incorporates intervallic approaches with landmark notes, building the interval 2nd and 3rd from the landmark notes. While the series discusses intervals up to the 5th in *Level 1* to *Level 2*, each interval is frequently reviewed in the practice pieces. However, the practice pieces lack instructions or cues to highlight the intervals or patterns. The word “pattern” is used when the left-hand accompaniment pattern is introduced in *Level 2* for an improvisation activity (*Level 2*, p.67) and the chord patterns in the Twelve Bar Blues (*Level 2*, p.128).

Before any note names and intervals are introduced, the series introduces several rhythmic concepts, including eight notes which often appeared in higher levels in other method book series. The series displays some rhythmic concepts independently while other concepts are introduced as a group. Since *Level 1* addresses most of the simple rhythmic concepts in both notes and rests, *Level 2* explores various rhythmic patterns composed of multiple rhythmic concepts.

In summary, the *Piano Safari* series establishes the concepts of patterns based on intervals, with some left-hand accompaniment patterns briefly mentioned in Level 2 as a part of an improvisation activity. Since the series emphasizes rote learning, practice pieces are displayed without instructions to promote reading or pattern recognition. *Level 1* concentrates on introducing rhythmic concepts and with *Level 2* building on the basic concepts by combining to form more complex rhythmic patterns. Since only a limited number of musical concepts are introduced in both levels, specifically intervals between the interval 2nd and 5th intervals, and eight rhythmic concepts (notes: whole, dotted half, half, quarter, eighth; rests: whole, half, quarter), the concepts are frequently reviewed in the practice pieces. However, few guides or instructions are included to direct learners to recognize them as a pattern.

Visual Cues

The main visual cues in this series are a phrase marks and fingering notations. The slur is introduced in *Level 1* and is identified as a shorter version of phrase mark, which indicates legato playing (Level 1, p.110). In *Level 2*, reading practice includes phrase marks, which are longer slurs, and fingering is provided for the first note of the phrase. The fingering indication for the first note in the phrase is a useful visual cue for learners to prepare mentally for upcoming groups of notes that are presumably in the five-finger range. However, the series neglects to propose strategies or mechanisms to break down longer phrases into smaller patterns which is important for developing chunking processes. Longer phrases containing a greater number of notes may be counterproductive, overwhelming the student's processes resulting in learners choosing to read one note at a time instead of processing the phrase as a group. Thus, the series relies on the phrase marks and fingering notations to recognize notes as a group.

J. Interactive Piano (2016): Book 1A, Book 1B, Book 2A, Book 2B

Instructions and Concepts for Patterns

The first two levels, *Book 1A* and *Book 1B*, of the Interactive Piano series concentrates on reading individual notes. Adopting some ideas from the intervallic approach, landmark notes are presented first instead of displaying notes consecutively from Middle C. *Book 1A* introduces the fundamental pattern concepts - repeat, steps, and skips, and intervals and chords are introduced in *Book 1B* as well as a brief discussion about the patterns. The given instructions prompt learners to recognize and describe patterns and create their own patterns (Book 1B, p.19). However, the book does not provide additional instructions to establish and practice pattern recognition, despite the inclusion of clear patterns within the practice pieces. The word “pattern” appears again in *Book 2A* to describe scales. The series defines the major scale as “a pattern of whole steps and half steps” (Book 2A, p.22). *Book 2B* contains different chords in both blocked and broken forms, and also demonstrates the Waltz pattern (Book 2B, p.8-9). Additionally, phrases are defined as “a musical sentence” (Book 2B, p. 20), even though slurs appear, undefined, in *Book 1B*.

This series chooses to introduce one rhythmic concept at a time. Prior to presenting note names, the series introduces three rhythmic concepts – the quarter, half, and whole note. These concepts are presented singularly, with the first mixed rhythmic pattern appearing halfway through *Book 1A* after the introduction of the quarter rest (Book 1A, p.16) and a listening activity instructing students to “hear this pattern of quarter notes and half notes” (Book 1A, p.21) and directing learners to circle the patterns.

Overall, the series develops pattern related concepts based on common fundamental patterns and conventional patterns. Although the series acknowledges patterns, the instructions provided to aid in pattern recognition is limited and excludes strategies or labelling systems to conceptualize non-conventional patterns.

Visual Cues

Starting in *Book 1B*, the series presents a slur as the most common visual cue to group notes (p.12-13). *Book 1A* does not contain any specific visual cues to indicate patterns except for fingering notations. Since most of the patterns in *Book 1A* are based on stepping and skipping motions of two or three-note groups, the fingering indications on individual notes triggers the grouping of notes, such as a group of 1-2-3 fingers (Book 1A, p.16). The fingering notations evolve in *Book 2A*, whereby a circled fingering indicates the need to reposition the hand. In addition, some practice pieces include note name and fingering notation on the first note of every



Figure 27) an example of symbols, *Book 1B* from *Interactive Piano* (2016) p.14

measure or for every new hand position, which can trigger mental and physical preparation for navigating melodic patterns around the first note of the measure (Book 1A, p.35). Finally, some practice pieces use special symbols to indicate the beginning of phrases. Depending on the theme of the practice piece, a little clip art, such as a party hat, flute, or a bowling ball, is placed on top of the phrase indicating the start of a musical sentence (Figure 27). This series uses four visual cues - slurs, fingerings, and clip art – to initiate pattern recognition and aid students in reading notes as a group. Although the visual cues used in this series may promote

chunking behaviour, the series does not include any step-by-step system to establish reading as a pattern or chunking process.

2.2. Sight-Reading Book Series

A. Piano sight reading (2004): Vol. 1

Instructions and Concepts for Patterns

The *Piano Sight-Reading* series by John Kember (2004) is divided into *Volume 1* and *Volume 2* where *Volume 1* is designed for Primary to the Grade 2 level. The first part of *Volume 1* consists of practice drills promoting three fundamental pattern concepts in a five-note range. The second part comprises practice drills containing enlarged patterns, which incorporate bigger intervals, different hand positions, various keys, and more sequences.

Upon the introduction of repeats, steps and skips, students are instructed to identify these patterns in practice drills. Students are then introduced to the concept of sequence, as “a short, repeated melodic phrases, generally up or down by steps” (p.11), which elicits intentional awareness about patterns with the same shapes and behaviours. In addition, the series regulates the size of patterns. For example, the patterns in the beginning consist of three or four notes in a measure and expand gradually in size as phrase marks are implemented. The instructions to “look for patterns” appears frequently in the book, however, there are no other labels, titles, or descriptions about undefinable and non-conventional melodic patterns beyond repeats, steps, skips, and intervals. For rhythm patterns, the series mostly incorporates single concept rhythmic patterns or very simple patterns repeatedly, which creates inclined grouping by the meter and measure and brings more attention to the melodic patterns. Unlike the method book series or other Sight-Reading book series, there is no specific section to display a certain rhythmic pattern.

Overall, this Sight-Reading book series promotes pattern recognition based on three fundamental pattern formats and expanding to include recognizing intervals and sequences. The series also gradually builds up the size of the patterns and number of notes in a measure, which may assist in establishing the note reading. However, this series neglects to introduce terms or labels that could be utilized to describe patterns and refer to patterns which appear in different contexts.

Visual Cues

One of the unique visual cues used in this series is a line that indicates the direction and motion of the pattern. Although the line indication appears only once at the beginning of the



Figure 28) Line as a visual cue, *Piano Sight-Reading Vol. 1 (2004) p.8*

series (Figure 28), indicating the pattern of three passing notes, it provides an example of visualizing melodic contour

and demonstrates grouping multiple notes as a unit. This series also uses brackets to indicate the beginning and end of patterns (Figure 29), and students are directed to incorporate their own

brackets (p. 13), initiating independent chunking behaviours. The bracket transforms into a



Figure 29) Grouping by brackets, *Piano Sight-Reading Vol.1 (2004) p.11*

phrase mark, a more conventional form in actual music, later in the series. These two visual cues, lines indicating pattern directionality and brackets marking pattern limits, are

useful and helpful for pattern recognition. Unfortunately, these visual cues are not consistently applied to all practice drills. In addition, the initiation of grouping notes and noticing patterns is

left up to learners taking initiative or reliant on teacher's consistency, as these cues are introduced early without continuous reinforcement.

B. Alfred's Premier Piano Course: Sight-Reading (2005): Book 1A, Book 1B, Book 2A, Book 2B

Instructions and Concepts for Patterns

The *Alfred's Premier Piano Course Sight-Reading* series is designed to promote five main activities (p.2): learning individual notes, recognizing melodic patterns, practicing rhythmic patterns, improving fluency, and playing expressively. The second and third activities concentrate on establishing pattern recognition, whereby each level promotes different types of patterns. For example, *Book 1A* reinforces five-finger patterns by the fundamental pattern concepts: repeats, steps, and skips. *Book 1B* incorporates various intervals along with the review of the fundamental pattern concepts. *Book 2A* focuses on recognizing tonic and dominant chords, and, finally, *Book 2B* expands on chord and scale learning to include different keys including the minor keys. Many rhythmic and melodic patterns in this series build upon the *Alfred's Premier Piano Course Method* book series. For example, rhythmic patterns introduced in the method book series are revisited in the sight-reading books. In general, this book series exposes students to various patterns, establishing conventional patterns, like intervals, chords, and scales in different keys. However, this series neglects to provide suggestions or mechanisms by which students can group notes and progressively develop grouping notes beyond the fundamental and the conventional pattern concepts, or breaking down longer phrases into more manageable sized patterns. In addition, many undefined patterns are disconnected to additional reading tasks due to a lack of names and procedures to identify and refer to the patterns.

Visual Cues

Two visual cues are observed in this series. The first cue is the written cue, “move” (p. 20-21), which directs students to move their hand to a new position. This cue suggests the timing and range of upcoming patterns, as most patterns at the beginner level are constructed within a five-finger position. The second visual cue, introduced in *Book 1A*, is a slur, which is also a phrase mark. In this level, a slur is used to group three or four notes, consisting of one to four pitches. This grouping of notes helps build “vocabulary” sized patterns, working as a bridge between recognizing two-note patterns, i.e., intervals, and long phrases, grouping multiple measures. Grouping medium sized patterns may aid in developing chunking behaviours through frequent exposure, however, the series excludes any mechanisms or labels to identify and describe non-conventional patterns.

C. Improve your Sight-Reading (2008): Book 1, Book 2

Instructions and Concepts for Patterns

Book 1 and *Book 2* from the *Improve your Sight-Reading* series are intended for early and late beginner level learners and are constructed to promote the practice of various rhythmic and melodic patterns, and the characters of the practice drills such as tempo and articulations. *Book 1* presents the fundamental pattern concepts to describe melodic patterns, directing students to find the shape of patterns. This level promotes six steps to prepare students for reading music: counting rhythm, reading individual notes, checking fingering, finding patterns, imagining the character, and pondering the sounds. The phrase mark is introduced in *Book 1*, instructing students notice microscales, a series of three or five passing notes, and arpeggios. Phrase sizes

progressively increase from groups of two or three notes to a length of four measures. *Book 2* encourages students to identifying scales, arpeggios, and their keys, and builds on *Book 1* through modification of the six steps: recognizing time signatures before counting rhythm, identifying notes based on key and key signatures, finding patterns focusing on scales and arpeggios, checking fingering and hand positions, imagining the character, and looking ahead at least two measures at a time. This level also encourages students to read vertical directions, anticipating reading both staves and playing with both hands. Overall, the series introduces numerous rhythmic patterns and melodic patterns with step-by-step guidance, which is modified to include more details as the level progresses. However, the main focus of pattern recognition is limited to distinguishing scales and arpeggios.

Visual Cues

A slur also known as a phrase mark introduced in *Book 1*, is the major visual cue in this sight-reading book series. Both *Book 1* and *2* display various patterns, formed by a slur, with the size of the patterns tending to increase gradually. For example, in the beginning of *Book 2*, the slur joins two or three notes as a pattern (p. 8-11) and is later used to mark patterns up to two measures in length containing seven or eight notes (p.36-39). Although phrase marks assemble different sized patterns in this series, the majority of the patterns marked by slurs consist of three or four note groups, which may aid in develop chunking behaviours to read three or four notes at a time. However, the series does not incorporate other visual cues to form patterns beyond the phrase mark.

D. Piano Adventure Sight-Reading (2011): Primer, Level 1, Level 2A, Level 2B

Instructions and Concepts for Patterns

The series is organized to frequently expose students to the same patterns to improve pattern recognition (Level 2A, p.4). The *Primer* Level concentrates on developing a broad sense of patterns through identifying repeats, steps, and skips, including practice pieces associated from the related method book series. The series progresses by introducing the conventional concepts of intervals, scales, and chords. Levels *2A* and *2B* especially promote familiarization with the major and minor scales and primary chords in different keys. The series also stresses “group[ing] notes into meaningful musical patterns” (Level 2A, p.4), containing explicit instructions for the recognition of rhythmic and melodic patterns, hand shifts, and conventional concepts to group notes. Pattern repetition facilitates the identification of patterns and frequent exposure may assist in decoding patterns with greater speed. This approach may initiate the chunking process, aid in grouping notes, and in perceiving them as a unit through repetition. However, the series contains no reference point, names, titles, or descriptions to refer to and connect patterns in unfamiliar contexts. In addition, the series expects learners will perceive patterns through frequent exposure to reading repeated patterns, while no further instructions or mechanisms are provided to establish pattern recognition strategies or conceptualize non-conventional patterns. Lastly, the series contains activities which predominantly focus on recognizing rhythmic patterns, while melodic patterns are relatively neglected.

Visual Cues

In this sight-reading book series, three common visual cues are presented to indicate patterns. *Level 1* marks the fingering for the first note of a pattern, guiding students to place a

certain finger on a certain key, providing an indirect indication of the upcoming pattern within the five-finger range. *Level 1* also introduces the articulation concepts through the presentation of slurs and staccatos, whereby a slur is defined as a sign of legato playing. Although a slur, itself, is already a phrase mark to display groups of notes as a unit, the alternating slurs and staccatos within a practice piece exhibit a clear distinction between the notes, whereby notes are grouped by articulation concept. *Level 2B* incorporates the concepts of chords using the Roman numeral symbols which are used to build pattern recognition of two or three chord tones with the object of improving speed and accuracy of reading. Additionally, the series includes practice pieces constructed with obviously repeated patterns. The practice pieces with these repeated patterns usually consist of smaller phrases or patterns that are divided by a measure, rest, or long note. Although the patterns are obviously recognizable, it is unknown if the learners will perceive the pattern as a unit or multiple single notes without specific instructions notifying them to the patterns.

E. Sight Reading & Rhythm Every Day (2012): Book A, Book B, Book 1A, Book 1B, Book 2A, Book 2B

Instructions and Concepts for Patterns

This series is divided six sub-levels with each level containing ten units, and each unit having a clear goal. The series is designed to emphasize the recognition of intervals. The practice drills are developed based on the intervals introduced in the unit and are accompanied by an activity to circle the intervals, effectively grouping two pitches. The series consistently reminds students of the previously introduced intervals as well as the concept of the slur, which first appears in *Book B*. After the phrase mark is implemented into the practice drills, it is used to

group larger numbers of notes, however, the size of patterns does not necessarily build patterns from smaller to larger chunks. Five-finger patterns are introduced in *Book 2A*, which also coincides with the introduction of the word “pattern” (Book 2A, p.4 & p.18). Since five-finger patterns include any combinations of note groups within the five-finger range of a certain key, including major and minor keys, the five-finger patterns increase the potential size and types of the patterns students encounter. Although identifying the five-finger patterns aids in predicting the range and scope of possible patterns, it requires more mechanisms and processes to discern the construction of patterns instead of generalizing them as a five-finger pattern. Therefore, the series is remiss in the development of other patterns or in developing the identification of patterns larger than intervals but smaller than five-finger patterns. *Book 2B* explores chords and different keys, including transposing activities. In this level, the size of patterns is more organized and increase progressively (Book 2B, p.30), however, this book focuses on interval and generic pattern recognition without providing systematic approaches to establishing chunking processes.

Within this series, each unit contains various rhythmic patterns, mixing rhythmic concepts, and includes activities with instructions to speak words or a sentence in the highlighted rhythm. This activity promotes grouping notes with a given content, the words or sentence, and these words or sentence cue may aid in building connections with certain rhythmic patterns, becoming a reference point for the rhythms.

In summary, this series provides the conventional pattern concepts - intervals, scales, and chords, and five-finger patterns, with consistent instructions for the recognition of intervals and the identification of similar and different phrases. However, no further titles or references are provided to identify other types of patterns beyond the conventional pattern concepts. As the

concept of five-finger patterns broadens the size and complexity of the potential patterns, this concept requires a mechanism or system to describe and label patterns specifically to aid in reminding students and reducing the cognitive processing time to recognize these larger patterns in an unfamiliar context.

Visual Cues

The first visual cue introduced in this series is a circle, grouping two pitches of a certain interval. Students are instructed to identify certain intervals through circling them, with an example provided in a single activity. Having learners identify intervals visually is a useful initiative to develop the chunking process. In *Book 1A*, the series introduces slurs and legato playing (p. 22), which is the most commonly used visual cue to group notes. While one practice drill in *Book 2B* groups notes in increasing size using a slur (p. 30), for the majority of the series, slurs are used to group notes of various sizes without an intentional increase in pattern size. This reduces the ability to build capacity for chunking. Similar to other series, this series indicates the fingering for the first note of a section, guiding the initial hand position, whereby subsequent notes are constructed close to the initial note. Although the fingering does not indicate a particular pattern in this series, it regulates the scopes of possible patterns. Therefore, fingering can be an indirect visual cue indicating a pattern. In conclusion, the circle demonstrates a simple process to mark the patterns visually, however, it is limited in focusing only on intervals. A slur, the phrase mark, is a clear indication of a pattern, but the longer phrases may hinder the chunking process. Finally, the series overlooks the establishment of the chunking process through gradually presenting progressively complex patterns.

F. Piano Safari Pattern Pieces books (2014): Level 1, Level 2

Instructions and Concepts for Patterns

The *Piano Safari Pattern Pieces* series contain practice pieces intentionally composed to introduce specific repeated patterns. The purpose of this series is to make students conversant with patterns and physical movements to play the patterns. The series indicates that learners are expected to memorize the patterns and accompanying motions, and then the memorized patterns are eventually linked to note reading (Level 1, p.3). *Level 1* presents three pattern pieces focusing on consecutive alphabet note names, displaying the same note pattern in different registers. Since the first pattern is shown with their alphabet names, the learners can predict the note names of the patterns in different registers. The pattern pieces in Level 1 expose students to targeted rhythmic patterns or melodic patterns with steps and skips, or mixtures of three and four notes. The appearance of phrase marks in *Level 1* also encourages the grouping of notes. While the pattern pieces in *Level 1* builds students' recognition of repeats, steps, and skips, *Level 2* presents patterns with larger intervals, up to different forms of 5ths, and challenges learners to transpose a pattern in different positions and in different keys (Level 2, p. 14-17). While this series uses frequent pattern repetition and phrase marks to indicate patterns and assist in grouping notes, this series seldom includes instructions or explanations about the purpose of the pieces, whether the targeted patterns are melodic or rhythmic, or on which the concepts that the piece is focused on. Moreover, the pattern pieces are presented without any extracted sections for rhythmic patterns or melodic patterns recognition, therefore, it is the learners' or their teachers' responsibility to recognize or direct students to recognize the goals of these pieces.

Visual Cues

The first visual cue which appears in this series is the alphabet note names (Level 1, p.4-6). While note names often connect students to learning individual note names, this series utilizes the note names as a grouping tool, presenting the note names only for the initial pattern, which is the core of the repeated pattern. For example, in a pattern with three stepping note, C-D-E, the pattern piece displays the first three notes with their corresponding alphabet name, but no note names are included for the repeated pattern in different registers. Due to the repetition of the patterns, learners should recognize the “C-D-E” group instead of three individual notes. In addition, the register changes of the same pattern become a visual cue to group notes since the distances between each register creates a gap for each group (Figure 30). Like other method and

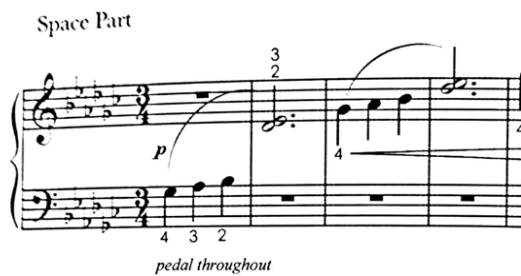


Figure 30) Grouping by different registers and phrase marks, Level 1 from Piano Safari Pattern Piece (2014) p.14

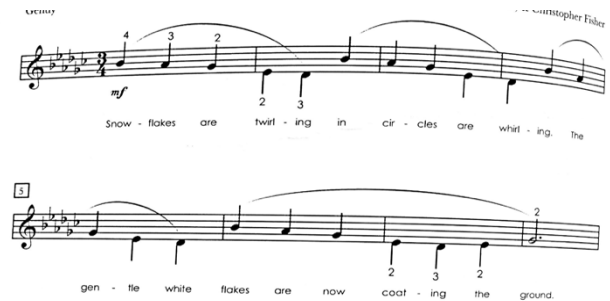


Figure 31) Grouping by phrase marks, Level 1 from Piano Safari Pattern Piece (2014) p18.

sight-reading book series, the phrase mark is frequently used to group the notes in both *Level 1* and 2 and the same phrases appear repeatedly (Figure 31). This series demonstrates both functions of fingerings: indirect and direct grouping. The first function is to imply an indirect grouping cue by moving hands into a new position, cueing students to assume that the upcoming pattern will be in a new range, while the second function is to suggest an actual pattern. For instance, when a certain fingering is designated to play a specific pattern, the fingering is shown for the initial pattern and the same fingering is applied to the remaining sequences – or repeated

patterns. Additionally, when a new pattern is introduced, a new fingering notation is assigned to play the new pattern. In this case, fingering is used to directly associate the cue with the pattern, beyond indirectly guiding the range of the possible patterns. In conclusion, this series introduces patterns using four visual cues, where fingerings and phrase markings are commonly used to group notes in both levels while alphabet note names and the separation of grouped notes by different registers are only observed in *Level 1*.

G. How to Blitz Sight Reading (2016): Book 1.

Instructions and Concepts for Patterns

The *How to Blitz Sight-Reading* series is organized into ten sub-levels with five main activities, learning rhythmic patterns, individual note names, melodic patterns, chords, and transferring rhythm into melody. The melodic pattern section establishes pattern recognition based on three fundamental concepts: repeats, steps and skips up to level 5. Starting in level 6, rhythmic and melodic pattern activities are replaced with activities to recognize intervals and practice short sight-reading pieces. The chord section builds from introducing primary chords (I, V or V7, and IV) in various keys, to introducing accompaniment ostinatos such as “Oom-cha-cha-cha pattern” (p.66) or Alberti bass patterns (p.77). This series provides guidance for pattern recognition and includes activities to develop individual note reading and pattern reading. However, the concepts of patterns are built on the fundamental and conventional pattern concepts, with no suggestions or strategies presented to recognize non-conventional patterns. The phrase mark, a slur, is introduced in Level 9, where it mostly groups three or four notes. Overall, the series attempts to embrace both individual notes reading, and pattern reading, including important concepts to identify and group patterns. However, the activities are

insufficient to lead to a systematic chunking process for increasing the size of patterns or managing non-conventional patterns.

Visual Cues

The series contains written instructions to initiate pattern recognition without any particular visual cues. The slur is the only visual indication used in this series. Although some drills indicate which fingering should be used, the fingering notation is not associated with forming patterns or conveying the range of the upcoming patterns since fingerings are shown on the first note of every measure. Instead of using special visual cues, the series presents practice drills that create a pattern through having a rest at the end of pattern, or trading patterns between a left and right hand. This musical cue from the score creates a clear indication of the beginning and the end of the patterns. Therefore, the series designs the practice drills to feature patterns clearly using musical notation and slurs, however, no extra visual cues are used to establish the chunking process.

In conclusion, few method book or sight-reading book series include instructions to draw students' attention to specifically recognize patterns. When a series explains pattern concepts or introduces a unique term for non-conventional patterns, these instructions aid in identifying patterns clearly, providing a label for future use. However, if non-conventional patterns are presented as a pattern using general terms, this disconnects the identification and recognition for the same or similar patterns which may appear in another repertoire. While some method book series specifically define a pattern, repeated pattern, or phrase, in general, most series present patterns with poor definitions or use vague definitions in various contexts. With an ill-formed

definition, series are faced with a challenge to establish a mechanism to form and identify patterns. One unique instruction found in the *Succeeding at Piano* (2010) method book series, which is called “unit practice”. The “unit practice” aids in developing chunking, by encouraging students to read a measure plus one note from the next measure. This example is a strategy to develop the chunking process beyond recognizing a given pattern.

Both method and sight-reading book series establish patterns through the introduction of the fundamental and conventional pattern concepts to group and identify notes. For non-conventional patterns, groups of notes not identified by a conventional pattern, some method book series attempt to provide terms and strategies to handle these patterns, displaying a brief example on forming and recognizing patterns with unique names or descriptions. Unfortunately, this process was not developed gradually or introduced systematically in the series, which limits chunking processes.

A total of six major types of visual cues are employed by the analyzed series to indicate chunks (See Appendix D). The most common visual cue used is a slur, also known as a phrase mark, with all of the series introducing this cue, in part because a slur not only groups notes but also provides articulation instructions, namely, playing legato. Along with the phrase mark, some method series also utilize graphic symbols or a short command word to indicate the beginning or the end of a phrase prior to the introduction of the phrase mark, or in places where the phrase does not require legato articulation. A bracket was used by some series to aid in pattern or sequence recognition within a score, though some series used this cue better than others. Fingering notations are another commonly found visual cue, used to either indicate a pattern or indicate a hand position and range. While the first function is directly related to pattern recognition, the second function assists in mental preparation for the upcoming possibilities. To

this second function, some method books include a graphic symbol or a word indication (e.g., “move”) along with the fingering to provide direct instruction for the reposition the hands. Another visual cue used in the analyzed series is a gap or space created by rests or register changes including alternating between right or left hands. This visual cue is observed mainly in the sight-reading book series, which are intentionally designed as drill practice to develop pattern reading. The last major visual cue found in these series is the presence of the Roman numeral symbols to indicate harmonic structures. This symbol usually appears only in later levels of the book series following the introduction of primary chords, providing a visual cue to assist in recalling chords and prepares learners to play groups of chord tones mentally and physically. One series, the *Piano Sight Reading* series, employed a useful visual cue for chunking and deserves a special note – underlining a pattern and its sequence, which visualizes the direction, length, and contour of the pattern. This visual cue is useful for establishing the chunking process.

V. Discussion

Summary of findings

This thesis examined ten piano method book series and seven sight-reading book series, a total of fifty-eight books, for the purpose of analyzing the use of chunking to build music reading skills. To that end, this analysis seeks to 1) investigate chunking techniques or mechanisms used within the books to establish music reading skills and 2) identify visual cues that are utilized by these series to assist in the chunking process, using both qualitative and quantitative data analysis.

1. Quantitative Data Analysis

Due to the limited working memory capacity of the human brain (Gobet & Clarkson, 2004; Cowan, 2010), it is important to examine the size of the patterns, the sequence by which patterns are introduced, and the frequency of different sized patterns, as this demonstrates whether patterns are introduced gradually and strategically. In addition, the frequency of pattern reinforcement is also important in improving the chunking process, as observed in language learning (Quinn, 2021).

Through the analysis of the number and types of melodic and rhythmic patterns, four factors were identified which were found in the majority of the series: the inclusion of small melodic patterns, the lack of mid-sized patterns, the gradual development and reinforcement of rhythmic concepts, and the lack of reinforcement for melodic concepts.

Small size of melodic patterns. Melodic patterns with a combination of two pitches or two notes were the most common within the evaluated method book series. Although some method book series used a greater number of three pitch patterns (*Celebrate Piano, Alfred's*

Premier Piano course, and *Music for Piano*) or patterns with a combination of six or more notes (*Celebrate Piano* and *Alfred's Premier Piano Course*), the majority of the patterns presented in bulk of the method book series were composed of two pitches or notes. The larger sized patterns increased in occurrence as the levels progressed, however, all the method book series failed to display a balanced or gradual increase in pattern size. This was due to the manner in which concepts were introduced. Most of the method book series first introduced the fundamental concepts of repeats, steps, and skips, with intervals indicating the distance between two notes. As such, the drills and repertoire guided students to recognize and play groups of two notes or pitches; consequently, the two-note/pitch patterns were the most frequently encountered. However, the method books neglected to incorporate any mechanism or concepts to define non-conventional patterns with three notes or more, which resulted in fewer patterns containing three or four notes.

Lack of mid-size melodic patterns. The number of melodic patterns with five or more notes was greater than the number of melodic patterns with three or four note combinations, demonstrating a lack of mid-sized patterns. In general, three or four note groups were not provided with distinct labels or associated with musical concepts, which limited the concepts to group these mid-sized patterns when they appeared within the evaluated series. Instead, a slur, otherwise known as a phrase mark, formed the mid-size patterns. However, when indicated, phrases were defined as either a “musical sentence” (*Piano Safari*, Level 1, p.78; *Interactive Piano*, Book 2B p.20) or “a group of notes” (*Celebrate Piano*, Book 1A, p. 34). The length of a phrase was not restricted, and the size of the patterns marked by the phrase mark tended to be longer unless the phrase was specifically designed to practice a mid-sized pattern. While some sight-reading books series were intentionally designed to use the phrase mark to group three to

five notes, the phrase marks in the method book series were varied with more patterns consisting of five or more notes as opposed to patterns consisting of three or four notes.

Gradual development of rhythmic patterns with reinforcement. Rhythmic patterns consisting of two or three concepts were the most common types of patterns in both the method book series and the sight-reading book series. Rhythmic patterns were grouped and regulated by measure and time signatures, while melodic patterns required additional elements, such as a pitch and contours, whereby the pattern could be formed beyond the measure unit. Compared to melodic patterns, rhythmic patterns were often introduced separately from the practice pieces, drawing students' attention to the pattern itself and providing learners with the opportunity to become familiar with the rhythmic pattern prior to playing. In addition, rhythmic concepts were always presented with accompanied patterns, even if they were introduced one at a time. Therefore, within the frame of time signature and measure, the identification and grouping of rhythmic patterns did not require the use of additional terms. Many rhythmic patterns were built and expanded upon previously introduced patterns, which created instinctive reinforcement.

Limited reinforcement of melodic patterns. Lastly, this study examined reinforcement from two perspectives: the reappearance of patterns in progressive levels and the presence of instructions to remind students of the melodic pattern concepts. When the method book series focused on introducing students to a smaller number of melodic patterns, these patterns were repeated more frequently in progressive levels. However, if the method book series introduced a large number of melodic patterns, the majority of these patterns appeared only once and were rarely reviewed. Similarly in the sight-reading book series, many melodic patterns were introduced with little focus on reinforcement between levels. In fact, the sight-reading series generally presented more melodic patterns than the method book series but included less

reinforcement within and between levels. It appears that, in an effort to expose students to a greater variety of melodic patterns, some of the evaluated series sacrificed repetition and reinforcement.

In addition to limiting the number of times a particular melodic pattern was repeated, method book series introducing many melodic patterns failed to provide written instructions highlighting the concepts to remind students of the introduced patterns. The series which introduced fewer concepts included more reminders and instructions for students to identify and review the pattern concepts. In general, fundamental pattern concepts, such as repeats, steps, or skips, or conventional pattern concepts, such as intervals, scales, and harmonic chords, were the most frequently reinforced patterns in the evaluated series. Some series which used unique terms or names for non-conventional patterns reviewed these patterns, however, most non-conventional patterns identified by either fingering or brackets were presented once and rarely repeated. This demonstrated the advantage of using an identifier to label non-conventional patterns to aid in pattern repetition and reinforcement.

In summary, the quantitative analysis of the included method and sight-reading books revealed that most of the included series did not use a progressive system or strategy to establish chunking techniques, especially for melodic patterns. Even though variously sized melodic patterns were presented in these series, no mechanisms or techniques were observed to expand the size of the patterns gradually or systematically. The method book series mainly focused on introducing students to the fundamental pattern concepts and intervals, with most of the melodic patterns grouped by two pitches or two notes. The introduction of the phrase mark or scales in different keys corresponded to an increase in melodic patterns with five or more notes, however, few patterns with three or four pitches/notes were introduced. Considering the structural

similarity between language and music (Sloboda, 2004), the method book series introduced letters (notes) and provided a mechanism to group consonants and vowels (intervals) but jumped into practicing sentences (long phrases) before introducing words (mid-size non-conventional patterns). Although some sight-reading book series were designed to fill the gaps in the method book series, these series generally neglected to provide pattern grouping and identifying mechanisms since pattern recognition was built on frequent exposure to different types of patterns instead of providing a strategy to group notes and build chunks.

2. Qualitative Data Analysis

The qualitative analysis of this thesis focused on the written instructions and visual cues used to identify and define pattern related concepts. The book series were evaluated on whether the included instructions could be useful in establishing chunking techniques or could aid in grouping notes into chunkable information to assist information processing in younger children (Mathy et al, 2016). In addition, the series were evaluated on their use of visual cues to group notes promoting the chunking process and leading to a physical response, namely playing the patterns on the piano (Kuo, 2012).

Pattern related instructions and concepts. Both the method book series and sight-reading book series developed the pattern building based on fundamental (repeats, steps, and skips) and conventional (intervals, scales, and chords) pattern concepts. As such, the number of patterns with two pitches or notes predominated the patterns in the evaluated series. For non-conventional patterns, each series generally used the one term, “pattern”, but, depending on the series, referred to many different types of patterns. For example, some method book series defined any pattern within a five-finger range as a five-finger pattern, while other series only

termed five-finger consecutive scales as five-finger patterns. While both definitions were technically correct, the use of the more specific definition would be more useful to aid in establishing the chunking process.

Named patterns or patterns linked to specific concepts or descriptions are easily identified and referred to in written instructions, aiding in pattern recognition and chunking. Written instructions can explain or describe labeled patterns, which creates a cognitive chunk for learners. For example, the *Music Tree*, the *Celebrate Piano*, and the *Music for Piano* series provided examples whereby some non-conventional patterns were given labels which were referred to at a later point for pattern recall. This process creates a larger pool of chunkable information, improving accuracy during recall (Caltagirone et al, 1985; Mathy et al, 2016), when similar information is found in a new source.

Lastly, the “unit” practice from the *Succeeding at the Piano* series presented a unique mechanism to group notes as a reading unit, not related to a certain pattern concept. The instruction of the “unit” practice provided a clear boundary to form a chunk - a measure and the first note in the next measure. This approach suggests a guideline to form a chunk of notes by regulating the scope of the notes. Therefore, this strategy could potentially assist in establishing chunking techniques by proposing a boundary to form a manageable chunk and training to read music by a defined “unit”.

Visual cues. Visual cues have been shown to aid in the recall process, have been proven to be beneficial for the working memory (Cowan et al, 2015), and have been linked to eliciting a desired physical reaction (Loehr and Palmer, 2007). Analysis of the visual cues present in the included series revealed the use of six common visual cues, three of which could lead to a physical response.

The slur, a.k.a. phrase mark. The most common visual cue was the slur, also known as the phrase mark. The slur was used to indicate legato playing and to group notes. While an obvious visual cue to group notes and identify patterns, phrase marks found in the book series were often larger than the possible working memory capacity of young learners. Some sight-reading book series considered the size of the pattern when using phrase marks; however, most of the method book series introduced phrase marks demarcating long phrases without introducing approaches to break the longer phrase into more manageable patterns. In these cases, the phrase mark mainly denoted legato playing, instead of providing a technique to group the notes into a processing unit.

A unique symbol and a command word. Some method series incorporated a unique symbol or a short command word at the beginning or end of a phrase. Generally, this visual cue was used as a preliminary version of the phrase mark, indicating the start and end of a phrase, and provided a visual cue for the student to re-position their hands in preparation for the notes which followed. Therefore, this visual cue was primarily associated with directing a physical response as opposed to grouping notes into a chunk. The cue guided students to prepare for possible upcoming patterns by repositioning their hands. This cue was often accompanied with a fingering cue on the first note of the phrase, reinforcing its use to direct a physical response by placing the hands in the correct position.

A bracket or circle. Some series placed brackets or circles around groups of notes to indicate patterns or to break down longer phrases into more manageable sized pieces. In addition, students were instructed to add brackets around or circle similar patterns, providing a cognitive link to identifying patterns leading to chunking. However, this visual cue or instructions related

to this cue were rarely repeated at higher levels, despite its usefulness in building chunking techniques.

Fingering. Fingering notations were found in several of the evaluated series, where they were used as a visual cue to trigger a direct physical reaction. Fingerings were used to group notes either directly or indirectly. Some series used specific fingerings to denote a distinct pattern; for example, in *The Music Tree* series (Clark et al, 2000), fingerings were used to guide students to play a specific pattern. The fingering pattern was used to play a distinct pattern which could be easily transposed to a different key. Other series used fingerings as an indirect grouping mechanism, by which the fingering pattern indicated a new hand position. This use of fingering notation closely resembled the unique symbols or command words at the beginning or ends of phrases, indicating a shift in hand position instead of a distinct pattern.

Rests and a different register. Some visual cues were embedded within the score. Rests and register changes were used in some series as a visual cue to distinguish between groups of notes. For example, having a rest at the end of a pattern created an instinctive gap between groupings of notes and signaled a physical reaction to be silent for that moment. Similarly, register changes, placing notes at a different visual height on the page, also created a visual gap between patterns. For example, in the *Music Tree* and the *Piano Adventure* series, the groups of notes were written three times: on the lower left side, in the middle, and on the upper right side of the page. In *How to Blitz Sight Reading*, the patterns were presented on the bass clef and then on the treble clef, creating a visual division and guiding the student to alternate hands to play the pattern.

Roman numeral symbols. The final visual cue commonly found in the evaluated series was the use of Roman numeral symbols (I, V, V7 and IV) to indicate harmonic chords after the

introduction of primary chords. Conveying information about the harmonic chord tone and function, these symbols provided guidance regarding the group's pitch and acted as a memory cue for chord recall, shortening processing time.

In conclusion, as observed in the quantitative analysis, the majority of the method book series introduced concepts to group and identify small sized patterns. Both the method book series and the sight-reading book series addressed the fundamental and conventional pattern concepts and instructions to recognize patterns recognition. However, non-conventional patterns were rarely given a distinct name or label, which reduced the ability of learners to remember and recall these types of patterns. The analysis of visual cues discussed the types and functions of the visual cues related to group the notes and/or to trigger a physical reaction. Brackets and circles were useful to establish a chunking technique by grouping the notes into more manageable sizes, and the use of fingering notations and Roman numeral symbols facilitated the link between grouping notes and generating a physical response. However, these cues were only indicated a few times throughout the books, while phrase marks and symbols for phrases were observed more consistently. Therefore, no clear strategies were found to establish a chunking technique beyond grouping notes into intervals, chords, or scales. While the use of visual cues was helpful, they were insufficient to develop chunking techniques due to inconsistent usage, lack of reminders (brackets and Roman numeral symbols), implicit intentions (symbols or fingerings for the new hand positions), and the use of cues with alternative purposes (phrase marks for grouping extensive notes and playing legato).

Issues and suggested solutions

Based on the analysis of the method and sight-reading book series, four main issues limiting the development of chunking techniques were identified.

Size of the patterns. Due to limitations in the working memory capacity of the human brain, size matters in regard to the introduction of patterns (Gobet and Clarkson, 2004; Cowan, 2010). However, the method and the sight-reading book series established patterns based on fundamental and conventional patterns instead of introducing and building pattern concepts based on their size. The size of the patterns introduced in the majority of the series was generally limited to conventional pattern concepts: intervals grouped two notes, chords grouped three, scales either grouped five or eight consecutive notes, and phrase marks were generally used to group larger patterns. The problem with longer phrases and patterns forced students to learn beyond their working memory capacity (Beeler, 1995). The quantitative analysis demonstrated that pattern sizes did not increase gradually and there was little balance in the size of the introduced patterns. The lack of mid-sized patterns within the book series would be comparable to the lack of word acquisition in language learning (see Figure 32).

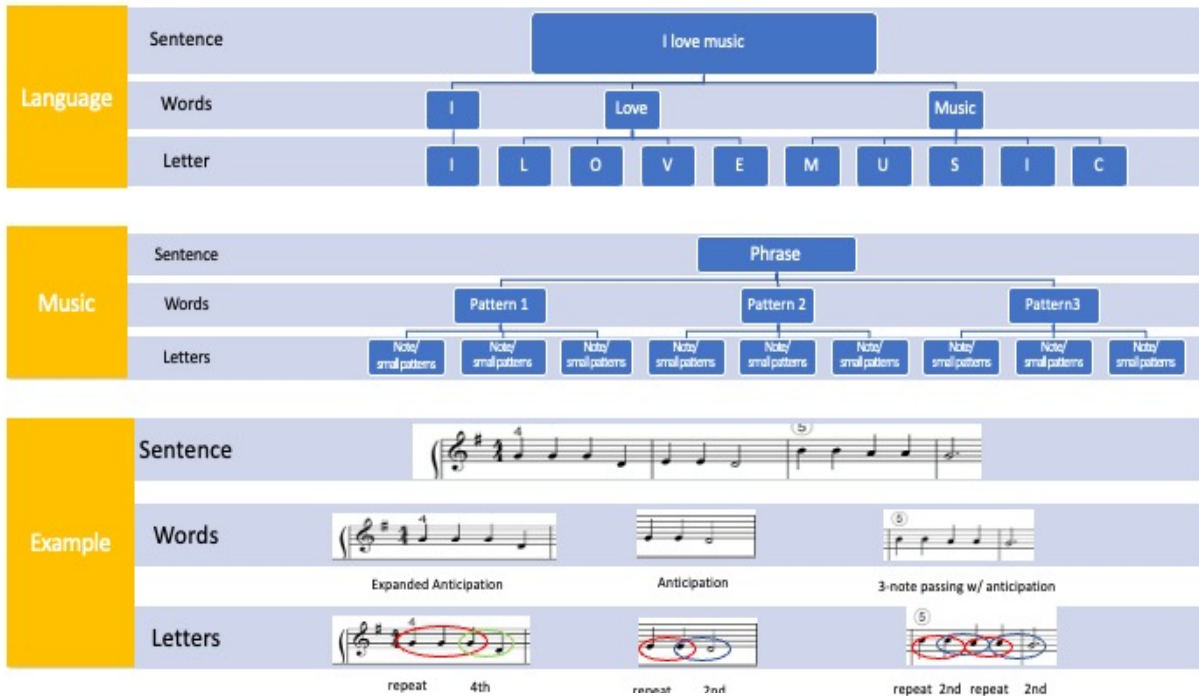


Figure 32) A comparison and application of the structure of language and music

To correct for this oversight, teaching materials should choose or compose practice pieces featuring non-conventional patterns of three or four notes labeled with a recognizable identifier. For example, in *Harmony Through Melody* by Horton et al. (2020) introduces twelve melodic figures and their elaborated forms, identifying the patterns of three to five notes based on the melodic interval of a cantus, expanding student’s musical vocabulary. Although beginner piano teaching materials generally avoid introducing higher level musical theory, strategically expanding the size of patterns may promote the grouping capacity of learners, similar to learning shorter words before longer complex words.

Limited conceptualization tools and mechanisms. With the introduction of longer phrases, teaching materials need to demonstrate how to break these phrases into smaller patterns. This process can be more effective and linked to developing chunking technique if the smaller chunks contain a meaning (Gobet et al., 2001; Lehmann & McArthur, 2002), creating

“chunkable information” (Caltagirone et al., 1985; Mathy et al., 2016). Clear or meaningful labels or names are important to identify and remember patterns accurately (Pajtas, 2002; Kalakoski, 2007; Souza et al., 2021; Lörch, 2021). The use of fundamental (repeat, step, and skip) and conventional concepts (intervals, scales, and chords) in the book series provides some tools to identify patterns and build group of notes. For non-conventional patterns, the use of fingering notations and unique names, definitions or descriptions are found in the teaching materials; however, these conceptualizing tools are not used consistently. Hence, the consistent use of identifiers for non-conventional patterns can promote “a deliberated chunking process” (Gobet et al., 2001). For example, as mentioned earlier, melodic figures can be a useful element to incorporate into teaching materials, as these concepts identify non-conventional patterns, and support chunking, memory, and the recall process. If the terms of the melodic figures are considered difficult for young learners to remember, students can be encouraged to make up their own names or labels, reflecting their perception of the patterns, which would be effective for memory and recall. The core intention of conceptualization is to encourage learners to remember and recognize patterns quickly, regardless of the identifiers used to label them. The introduction of identifying non-conventional pattern, either through concepts from music theory or through the application of any creative terms by the instructor or learner, can aid in developing chunking mechanisms for improving learning and recall.

Lack of deliberate reinforcement. According to the quantitative analysis, the book series generally failed to reinforce non-conventional patterns or concepts following introduction. This was especially evident in the series which introduced a large number of patterns, where many new patterns were introduced but hardly ever repeated. Even if some of the patterns were revisited, no reminders or instructions were available to assist the memory recall process.

Patterns defined by a fundamental or convention concept were reviewed more frequently than non-conventional patterns; however, not all of the method book or sight-reading book series included deliberate instructions to recognize these patterns.

While exposure to different rhythmic and melodic patterns may improve music reading skills (Gudmundsdottir, 2003; Reifinger, 2007; Pike & Carter, 2010), the presence of specific instructions aids in pattern recognition and facilitates chunking (Chivington, 1990; Reifinger, 2007). Eventually, this deliberate reinforcement can establish transferrable patterns, like building a language vocabulary. Hence, after introducing tools or mechanisms for conceptualization, appropriate and deliberate reinforcement is critical to develop, sustain, and improve chunking and pattern recognition.

Application of appropriate visual cues. Visual cues assist in the identification of patterns (Pajtas, 2002) and are closely associated with motor movements (De Kline and Van der Lubbe, 2011; Verwey and Abrahamse, 2012). In the evaluated book series, effective cues include the use of brackets, fingering notations, and the creation of gaps between patterns. Brackets visually group notes into a pattern or sequence and can be used by learners in their own practice. By designating a specific finger for each note, fingering aids in connecting a visual cue to a physical response, while adding a rest at the end of a pattern or placing patterns in different registers visually creates distances between pattern intuitively grouping the notes into a pattern. Unfortunately, the infrequent use of these visual cues diminishes their effectiveness. While not every practice piece or repertoire requires the presence of the visual cues, more frequent use would aid in memory and recall.

The slur is used frequently in the evaluated book series. Also used as a phrase mark, the slur groups notes visually but can hinder the chunking process. Functioning beyond merely

grouping notes, the phrase mark represents musical phrases as part of the larger musical story. As part of this special function, phrase marks assemble variable groups of notes, from two notes up to four measures of notes. Therefore, unless the teaching materials carefully and intentionally employ phrase marks to establish chunking skills, phrase marks for longer phrase can be overwhelming and inhibit chunking, especially for less experienced young learners. In addition, phrase marks demarcate articulation, namely legato playing. With multiple uses, the phrase mark is a poor visual cue unless additional instructions are included when teaching students.

To better incorporate the use of visual cues within teaching materials, visual cues should be used frequently while considering the size of the pattern and any additional techniques or concepts which are also being taught. Instructions and note-grouping activities should include various visual cues (e.g., colour coding, various shapes) and other tools to encourage learners to recognize patterns independently and develop their own methods to group notes. Finally, phrase marks should be utilized strategically - grouping two notes, three notes, a measure, two measures and four measures - building chunking techniques gradually.

VI. Conclusion

The purpose of this study was to investigate whether beginner piano teaching materials contain any progressive mechanisms or strategies to teach chunking techniques for music reading, and, if so, how they addressed chunking techniques. In addition, the study also analyzes the use of visual cues to trigger chunking and lead to the physical reaction of playing the piano. Since music reading connects visual information processing to motor movements, the literature review explores the relationships among visual information, the chunking process, and motor movements, as well as examining studies which utilize chunking techniques for rhythmic and melodic patterns and those which analyze music chunking based on different age groups. While many studies assert the importance of chunking in music reading and the possible benefits of using chunking techniques, no studies analyze the use or instruction of chunking methods in piano teaching materials. Therefore, this present study attempts to examine pattern related content qualitatively and quantitatively from selected beginner piano method book series and sight-reading book series.

The data analysis shows that the majority of the evaluated method book series focuses on introducing small melodic patterns, with a limited number of mid-sized patterns (between three to five notes), demonstrating a disjointedness in preparing beginner level students to build on the size of the melodic patterns they can read. Where the method book series fails, the sight-reading series presents a more balanced approach to introducing increasing sizes of melodic patterns, which may aid in equipping students in chunking techniques. However, the sight-reading book series lack instructions calling students' attention to the different patterns, due, in part, to the stated and unstated purpose of these books to expose learners to a large variety of patterns. Additionally, many patterns are introduced only once, with insufficient reinforcement to

maintain or recall patterns. Lack of reinforcement is linked to the neglect of conceptualization tools and mechanisms to identify non-conventional patterns, as pattern related concepts are related to the fundamental and the conventional concepts. Lastly, a few method and sight-reading book series incorporate extra visual cues which may support the chunking process and link the visual process to a physical motor response, however, the majority of the series rely on phrase marks, which may or may not lead to chunking. In conclusion, this research demonstrates that, at least in the evaluated beginner piano teaching materials, there is a lack of chunking techniques or systematic approaches to aid students in pattern recognition for improved music reading. In addition, possible suggestions are discussed to establish systematic chunking techniques, such as introducing more mid-sized melodic patterns with labels or identifiers which can be used for non-conventional melodic patterns, including more frequent instructions to promote note groupings and pattern recognition, and incorporating other types of visual cues instead of relying solely on the phrase mark.

Suggestions for further research

Further research is critical to develop systematic chunking techniques that will improve music reading skills for young piano students. Since the current study is limited to the selected method book series and sight-reading book series, further research should expand to include other method book series and technique books which may contain different types of visual cues useful for connecting the chunking process and motor movements. It is also necessary to design a method introducing and systematically building techniques which encourage chunking, and then test this method with the collection of empirical data to examine the advantages or disadvantages. This will provide a direct test of developing chunking techniques. Finally,

research is required to examine various chunking techniques and approaches used to master different instruments, such as string and wind instruments.

Bibliography

- Ahrens, & Atkinson, G. D. (1980). *For all piano teachers*. Frederick Harris Music.
- Arthur, P., Khuu, S., & Blom, D. (2016). Music sight-reading expertise, visually disrupted score, and eye movements. *Journal of Eye Movement Research*, 9, 1-11.
- Azzara, C. D. (1992). *The effect of audiation-based improvisation techniques on the music achievement of elementary instrumental music students* (Order No. 9223853). Available from ProQuest Dissertations & Theses Global
- Bar, R.& DeSouza, J. F. X. (2016). Tracking plasticity: Effects of long-term rehearsal in expert dancers encoding music to movement. *PloS One*, 11(1), e0147731–e0147731.
<https://doi.org/10.1371/journal.pone.0147731>
- Barlar, N. E. (2010). *The effect of sight-reading instruction on the language reading fluency and music sight-reading ability of middle school band students* (Order No. 3405960)
- Bebeau. M. (1982). Effects of Traditional and Simplified Methods of Rhythm-Reading Instruction. *Journal of Research in Music Education*, 30(2), 107–119.
<https://doi.org/10.2307/3345042>
- Beeler, C. J. (1995). *The effects of interval prestudy and a cue for rhythmic continuity on piano sight-reading achievement of group piano students* (Order No. 9617397). Available from ProQuest Dissertations & Theses Global
- Bluestine. E. (2007). A comparative study of four approaches to teaching tonal music reading to a select group of students in third, fourth, and fifth grade. ProQuest Dissertations Publishing.
- Brodsky, W., & Kessler, Y. (2017). The effect of beam slope on the perception of melodic contour. *Acta Psychologica: International Journal of Psychonomics*, 180, 190–199.
- Bugos, J. A., & Mazuc, J. (2013). Semantic Clustering and Processing Speed in Suzuki Violinists. *Bulletin of the Council for Research in Music Education*, 198, 7–22.
- Buonviri, N. O. (2010). *Effects of visual presentation on aural memory for melodies* (Order No. 3408697).
- Buonviri, N. O., & Paney, A. S. (2015). Melodic Dictation Instruction: A Survey of Advanced Placement Music Theory Teachers. *Journal of Research in Music Education*, 63(2), 224–237. <https://doi.org/10.1177/0022429415584141>
- Caltagirone, P., Carmean, S., & Lamb, G. (1985). Chunking Differences Associated with Reading Skill. *Psychological Reports*, 56(1), 107–110.
<https://doi.org/10.2466/pr0.1985.56.1.107>

- Chang, S. (1993). *A study of eye movement during sight-reading of selected piano compositions* (Order No. 9432497).
- Chase, W. G., & Simon, H. A. (1973). Perception in chess. *Cognitive Psychology*, 4, 55–81.
- Chivington. (1990). *The effect of differential choral group instruction on children's vocal and rhythmic performance of taught and transfer patterns*. ProQuest Dissertations Publishing.
- Cowan, N. (2010). The magical mystery four: How is working memory capacity limited, and why? *Current Directions in Psychological Science*, 19, 51-57.
- Cowan, N., Saults, J. S., & Clark, K. M. (2015). Exploring age differences in visual working memory capacity: Is there a contribution of memory for configuration? *Journal of Experimental Child Psychology*, 135, 72–85. <https://doi.org/10.1016/j.jecp.2015.03.002>
- Cox. B. (2000). *Factors associated with success in sight reading four -part chordal piano music*. ProQuest Dissertations Publishing.
- De Kleine, E. & Van der Lubbe, R. H. (2011). Decreased load on general motor preparation and visual-working memory while preparing familiar as compared to unfamiliar movement sequences. *Brain and Cognition*, 75(2), 126–134. <https://doi.org/10.1016/j.bandc.2010.10.013>
- Dunlap, M. P. (1989). *The effects of singing and solmization training on the musical achievement of beginning fifth-grade instrumental students* (Order No. 9013890). Available from ProQuest Dissertations & Theses Global.
- Emond, & Comeau, G. (2013). Cognitive modelling of early music reading skill acquisition for piano: A comparison of the Middle-C and Intervallic methods. *Cognitive Systems Research*, 24, 26–34. <https://doi.org/10.1016/j.cogsys.2012.12.007>
- Fjerstad, C. D. (1968). *A Comparison of Tachistoscope And Metronomic Training For Developing Sight-reading Of Harmonic Notation Within Class Piano Instruction* (Order No. 6911592)
- Gaynor, J. (1995). *Music reading comprehension: The effect of Aid to Chunking and Melodic Predicting on sight reading performance achievement of secondary school instrumental music students*. ProQuest Dissertations Publishing.
- Gobel, E. W., Sanchez, D. J., & Reber, P. J. (2011). Integration of temporal and ordinal information during serial interception sequence learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 37(4), 994-1000.

- Gobet, F., Lloyd-Kelly, M., & Lane, P. C. (2016). What's in a name? The multiple meanings of "Chunk" and "Chunking" *Frontiers in Psychology*, 7, 102. <https://doi.org/10.3389/fpsyg.2016.00102>
- Gobet, F., & Clarkson, G. (2004). Chunks in expert memory: Evidence for the magical number four... or is it two? *Memory*, 12, 732-747. <https://doi.org/10.1080/09658210344000530>
- Gobet, F., Lane, P. C. R., Croker, S., Cheng, P. C-H., Jones, G., & Oliver, I. (2001). Chunking mechanisms in human learning. *TRENDS in Cognitive Sciences*, 5(6), 236-243.
- Gobet, F. & Simon, H.A. (2000). Five seconds or sixty? Presentation time in expert memory. *Cognitive Science*, 24, 651-682.
- Gobet, F. & Simon, H.A. (1996). Templates in chess memory: A mechanism for recalling several boards. *Cognitive Psychology*, 31, 1-40.
- Gudmundsdottir, H. R. (2003). *Music reading errors of young piano students* (Order No. NQ88481). Available from ProQuest Dissertations & Theses Global.
- Halsband, U., Binkofski, F., & Camp, M. (1994). The Role of the Perception of Rhythmic Grouping in Musical Performance: Evidence from Motor-Skill Development in Piano Playing. *Music Perception*, 11(3), 265-288. <https://doi.org/10.2307/40285623>
- Horton, C., Byrne, D. A., & Ritchey, L. (2020). *Harmony through melody: the interaction of melody, counterpoint, and harmony in western music* (Second edition.). Rowman & Littlefield.
- Houghton, S. I. (2018). *Finding the right note: The strategy use of eighth grade choral students during vocal sight-reading* (Order No. 10823549).
- Jacobson, J. M. (2015). *Professional piano teaching: a comprehensive piano pedagogy textbook Vol.1* (E. L. Lancaster & A. Mendoza, Eds.; Second edition.). Alfred Music.
- Janssen, B. A. (2017). *A preliminary comparative study of rhythm systems employed within the first-year college aural skills class* (Order No. 10270362)
- Jones, G., (2012). Why Chunking Should be Considered as an Explanation for Developmental Change before Short-Term Memory Capacity and Processing Speed. *Frontiers in Psychology*, 3, 167-167. <https://doi.org/10.3389/fpsyg.2012.00167>
- Kalakoski, V. (2007). Effect of skill level on recall of visually presented patterns of musical notes. *Scandinavian Journal of Psychology*, 48(2), 87-96. <https://doi.org/10.1111/j.1467-9450.2007.00535.x>
- Kuo, M. (2012). *Strategies and methods for improving sight-reading on marimba* (Order No. 3584121). Available from ProQuest Dissertations & Theses Global

- Laing, D. (2007). *The effect of rhythm pattern instruction on the sight -reading achievement of wind instrumentalists*. ProQuest Dissertations Publishing.
- Lehmann, A. C., & McArthur, V. (2002). Sight-reading. In R. Parncutt & G. E. McPherson (Eds.), *The science & psychology of music performance* (pp. 135–150). Oxford: Oxford University Press.
- Li, S., Hu, J., Chang, R., Li, Q., Wan, P., & Liu, S. (2021). Eye Movements of Spatial Working Memory Encoding in Children with and without Autism: Chunking Processing and Reference Preference. *Autism Research, 14*(5), 897–910.
<https://doi.org/10.1002/aur.2398>
- Loehr, & Palmer, C. (2007). Cognitive and biomechanical influences in pianists' finger tapping. *Experimental Brain Research, 178*(4), 518–528.
<https://doi.org/10.1007/s00221-006-0760-8>
- Lörch. (2021). Chunking in tonal contexts: Information compression during serial recall of visually presented musical notes. *Psychology of Music, 30*573562110133–.
<https://doi.org/10.1177/03057356211013396>
- Mathy, F., Fartoukh, M., Gauvrit, N., & Guida, A. (2016). Developmental Abilities to Form Chunks in Immediate Memory and Its Non-Relationship to Span Development. *Frontiers in Psychology, 7*(7-201), 201–201.
<https://doi.org/10.3389/fpsyg.2016.00201>
- Maturi. K. (2021). *What's in a Chunk? Investigating Expertise Effects on Memory for Complex Visual Search Targets*. ProQuest Dissertations Publishing.
- McCabe. M., (2004). *The effect of movement-based instruction on the beginning instrumentalist's ability to sight-read rhythm patterns*. ProQuest Dissertations Publishing.
- Moher, M., Tuerk, A. S., & Feigenson, L. (2012). Seven-month-old infants chunk items in memory. *Journal of Experimental Child Psychology, 112*(4), 361–377.
<https://doi.org/10.1016/j.jecp.2012.03.007>
- Miller, J. A. (2009). *Emergent music literacy: Parallels of the language model in music literacy instruction* (Order No. 1468927)
- Mishra, J. (2014). Improving sight-reading accuracy: A meta-analysis. *Psychology of Music, 42*(2), 131–156. <https://doi.org/10.1177/0305735612463770>
- Montgomery, J., Evans, J. L., Fargo, J. D., Schwartz, S., & Gillam, R. B. (2018). Structural Relationship Between Cognitive Processing and Syntactic Sentence Comprehension in Children With and Without Developmental Language Disorder. *Journal of Speech,*

Language, and Hearing Research, 61(12), 2950–2976.
https://doi.org/10.1044/2018_JSLHR-L-17-0421

- Nassar, M., Helmers, J. C., & Frank, M. J. (2018). Chunking as a Rational Strategy for Lossy Data Compression in Visual Working Memory. *Psychological Review*, 125(4), 486–511. <https://doi.org/10.1037/rev0000101>
- Ojeda, A. (2010). *A comparison of improvements in sight reading pitch accuracy in beginning instrumentalists after treatment*. ProQuest Dissertations Publishing.
- Pak, A., Cheng-Lai, A., Tso, I. F., Shu, H., Li, W., & Anderson, R. C. (2005). Visual chunking skills of Hong Kong children. *Reading & Writing*, 18(5), 437–454. <https://doi.org/10.1007/s11145-005-6575-3>
- Pajtas. (2002). *The effect of tonal keyboard pattern instruction on sight-reading achievement of college class piano students*. ProQuest Dissertations Publishing.
- Pike, P. D. (2012). Sight-reading Strategies: For the Beginning and Intermediate Piano Student: A Fresh Look At A Familiar Topic. *The American Music Teacher*, 61(4), 23–28.
- Pike, P. D., & Carter, R. (2010). Employing cognitive chunking techniques to enhance sight-reading performance of undergraduate group-piano students. *International Journal of Music Education*, 28(3), 231–246. <https://doi.org/10.1177/0255761410373886>
- Quinn, R. (2021). *Exploring the Role of Phonological and Motor Learning in Word and Phrase Frequency Effects in Speech Production: the Effect of Word Frequency Phrase Frequency and Phonological Complexity on Speech Production in Children and Adults*. ProQuest Dissertations Publishing.
- Reifinger, J. L. (2007). *The effect of instruction with song -related tonal patterns on second graders' pitch reading accuracy*. ProQuest Dissertations Publishing
- Reynolds, M., Niileksela, C. R., Gignac, G. E., & Sevillano, C. N. (2022). Working memory capacity development through childhood: A longitudinal analysis. *Developmental Psychology*, 58(7), 1254–1263. <https://doi.org/10.1037/dev0001360>
- Saariluoma, P., & Laine, T. (2001). Novice construction of chess memory. *Scandinavian Journal of Psychology*, 42(2), 137–146. <https://doi.org/10.1111/1467-9450.00223>
- Saxon, K. (2009). The Science of Sight Reading. *The American Music Teacher*, 58(6), 22–25.
- Searle, J. (1985). *An investigation of movement to music and rhythmic pattern reading flash-card training in fifth- and sixth grade music classes*. ProQuest Dissertations Publishing.
- Sloboda, J. (1978). The Psychology of Music Reading. *Psychology of Music*, 6(2), 3–20. <https://doi.org/10.1177/030573567862001>

- Sloboda, J. (2004). Music as a Language. In *Exploring the Musical Mind*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780198530121.003.0009>
- Smalle, E. H. M. Bogaerts, L., Simonis, M., Duyck, W., Page, M. P. A., Edwards, M. G., & Szmalec, A. (2015). Can Chunk Size Differences Explain Developmental Changes in Lexical Learning? *Frontiers in Psychology*, 6, 1925–1925. <https://doi.org/10.3389/fpsyg.2015.01925>
- Smith, D. J. (1988). *An investigation of the effects of varying temporal settings on eye movements while sight-reading trumpet music and while reading language aloud*. ProQuest Dissertations Publishing
- Smith, F. (1994). *Understanding Reading, a psycholinguistic analysis of reading and learning to read.*, (5th edition). L. Erlbaum Associates.
- Souza, A., Overkott, C., & Matyja, M. (2021). Categorical distinctiveness constrains the labeling benefit in visual working memory. *Journal of Memory and Language*, 119. <https://doi.org/10.1016/j.jml.2021.104242>
- Stieff, Werner, S., DeSutter, D., Franconeri, S., & Hegarty, M. (2020). Visual chunking as a strategy for spatial thinking in STEM. *Cognitive Research: Principles and Implications*, 5(1), 18–18. <https://doi.org/10.1186/s41235-020-00217-6>
- Teo, S. P. G. (2020). *Chunking in sight-reading: A study with collegiate violinists* (Order No. 27959269).
- Thalmann, M., Souza, A. S., & Oberauer, K. (2019). How Does Chunking Help Working Memory? *Journal of Experimental Psychology. Learning, Memory, and Cognition*, 45(1), 37–55. <https://doi.org/10.1037/xlm0000578>
- Thomas, K. S. (2016). *The effect of aural instruction with tonal and rhythm patterns from Edwin Gordon's music learning theory on the aural discrimination abilities of second-grade students*. ProQuest Dissertations Publishing
- Uszler, Gordon, S., & Smith, S. M. (2000). *The well-tempered keyboard teacher* (2nd ed.). Wadsworth Cengage Learning.
- Verwey, W. B., & Abrahamse, E. L. (2012). Distinct modes of executing movement sequences: Reacting, associating, and chunking. *Acta Psychologica: International Journal of Psychonomics*, 140(3), 274–282.
- Watkins, J.G & Farnum, S. E. (1962) *The Watkins-Farnum Performance scale: A standardized achievement test for all band instruments*. Winona, Minn: Hal Leonard Music, Inc.
- Zhang, D., Ding, Y., Stegall, J., & Mo, L. (2012). The Effect of Visual-Chunking-Representation Accommodation on Geometry Testing for Students with Math Disabilities. *Learning*

Disabilities Research and Practice, 27(4), 167–177. <https://doi.org/10.1111/j.1540-5826.2012.00364.x>

Zhukov, K. (2009). Effective practising: A research perspective. *Australian Journal of Music Education*, 1, 3–12.

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Albergo, C., Kimber, W., Kolar, J. M., & Mrozinski, M. (2003). *Celebrate piano!: a comprehensive piano method. Level 2B*. Frederick Harris Music.

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Clark, F., Goss, L., & Holland, S. (2000). *The music tree: a plan for musical growth at the pian. Part 1* ([Rev. ed.]). Summy-Birchard Inc.

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- Faber, N., & Faber, R. (2011). *Piano adventures: the basic piano method (Lesson). Primer* ((2nd ed.). Faber Piano Adventures.
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- Faber, N., & Faber, R. (2011). *Piano adventures: the basic piano method (Lesson). Level 2A* (2nd ed.). Faber Piano Adventures.
- Faber, N., & Faber, R. (2011). *Piano adventures: the basic piano method (Lesson). Level 2B* (2nd ed.). Faber Piano Adventures.
- Fisher, K., & Knerr, J. (2014). *Piano safari (Repertoires). Level 1*. Piano Safari LLC.
- Fisher, K., & Knerr, J. (2014). *Piano safari (Repertoires). Level 2*. Piano Safari LLC.
- Marlais, H. (2010). *Succeeding at the piano: a method for everyone. Preparatory*. FJH Music Co.
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- Matz, C. (2016). *Carol Matz's inter@ctive piano method. Book 1B*. Carol Matz Piano.
- Matz, C. (2016). *Carol Matz's inter@ctive piano method. Book 2A*. Carol Matz Piano.
- Matz, C. (2016). *Carol Matz's inter@ctive piano method. Book 2B*. Carol Matz Piano.
- Pace, R. (1977). *Kinder-keyboard*. Lee Roberts Music Publications.
- Pace, R. (2006). *Music for Piano: Book 1*. Lee Roberts Music Publications
- Pace, R. (2006). *Music for Piano: Book 2*. Lee Roberts Music Publications
- Snell, K., & Hidy, D. (2004). *Piano town. Primer*. Kjos Music Press.

- Snell, K., & Hidy, D. (2004). *Piano town. Level 1*. Kjos Music Press.
- Snell, K., & Hidy, D. (2004). *Piano town. Level 2*. Kjos Music Press.
- Vogt, J., & Bates, L. (2001). *Piano discoveries: discovering the world of music at the keyboard. On Staff Starter*. Heritage Music Press.
- Vogt, J., & Bates, L. (2001). *Piano discoveries: discovering the world of music at the keyboard. Level 1A*. Heritage Music Press.
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- Vogt, J., & Bates, L. (2001). *Piano discoveries: discovering the world of music at the keyboard. Level 2B*. Heritage Music Press.

The Selected Sight Book Series

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- Fisher, K., & Knerr, J. (2014). *Piano safari (Pattern Piece). Book 2*. Piano Safari LLC.
- Harris, P. (2008). *Improve your sight-reading! Level 1*. (New edition.). Faber Music.
- Harris, P. (2008). *Improve your sight-reading! Level 2*. (New edition.). Faber Music.

- Kember, J. (2004). *Sight-reading: a fresh approach = Déchiffrage pour le piano: nouvelle approche = Vom-Blatt-Spiel auf dem Klavier: eine erfrischend neue Methode. Vol 1.* Schott.
- Marlais, H., Olson, K. R., & Olson, J. (2012). *Sight reading & rhythm every day. Level A*, FJH Music Company.
- Marlais, H., Olson, K. R., & Olson, J. (2012). *Sight reading & rhythm every day. Level B*, FJH Music Company.
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- Marlais, H., Olson, K. R., & Olson, J. (2012). *Sight reading & rhythm every day. Level 1B*, FJH Music Company.
- Marlais, H., Olson, K. R., & Olson, J. (2012). *Sight reading & rhythm every day. Level 2A*, FJH Music Company.
- Marlais, H., Olson, K. R., & Olson, J. (2012). *Sight reading & rhythm every day. Level 2B*, FJH Music Company.
- Matz, C., & McArthur, V. (2005). *Alfred's premier piano course: Sight-Reading Book 1A*. Alfred Publishing.
- Matz, C., & McArthur, V. (2005). *Alfred's premier piano course: Sight-Reading Book 1B*. Alfred Publishing.
- Matz, C., & McArthur, V. (2005). *Alfred's premier piano course: Sight-Reading Book 2A*. Alfred Publishing.
- Matz, C., & McArthur, V. (2005). *Alfred's premier piano course: Sight-Reading Book 2B*. Alfred Publishing.

Magazine

- Atkinson, L. (2017). A pedagogical journey of discovery In *Clavier Companion* (Vol 9, Issue 4, 30–31).
- Ernst, S. M. (2010). A Growth Process In *Clavier companion* (Vol. 2, Issue 3, pp. 45–46).
- Johnson, R. G. (2010 a). Perspectives in Pedagogy: Issues and Ideas - A Survey of Current Methods: “Piano Discoveries.” In *Clavier companion* (Vol. 2, Issue 1, pp. 28–35).

- Johnson, R. G. (2010 b). Issues and Ideas: Perspectives in Pedagogy - A Survey of Current Methods: "The Music Tree." In *Clavier companion* (Vol. 2, Issue 3, pp. 44–45).
- Johnson, R. G. (2010 c). Perspectives in Pedagogy: A Survey of Current Methods: "Piano Town." In *Clavier companion* (Vol. 2, Issue 5, pp. 34–35).
- Johnson, R. G. (2010 d). A Survey of Current Methods: "Celebrate Piano!" In *Clavier companion* (Vol. 2, Issue 6, pp. 34–38).
- Johnson, R. G. (2011). Perspectives in Pedagogy: A survey of current methods: "Succeeding at the Piano". In *Clavier Companion* (Vol 3, Issue 4, 32–33).
- Johnson, R. G. (2017). Learning & Teaching: Method reviews return: Piano Safari In *Clavier Companion* (Vol 9, Issue 4, 28–30).
- Johnson, R. G. (2018). Carol Matz's Interactive Piano Method In *Clavier Companion* (Vol 10, Issue 1, 27–28).
- Lancaster, E. L. (2010). Author Response, In *Clavier companion* (Vol. 2, Issue 3, pp. 50-51).
- Lovison, J. (2011). Building layers of musical understanding In *Clavier companion* (Vol. 3, Issue 5, pp. 46–47).
- Marlais, H. (2011). Author Response, In *Clavier companion* (Vol. 3, Issue 5, pp. 47-48).
- Singleton, L. (2010). A well-rounded and integrated approach In *Clavier companion* (Vol. 2, Issue 6, pp. 35–36).

Website

- Alfred Music (n.d.) *Improve your Sight-Reading! Level 1*. from <https://www.alfred.com/improve-your-sight-reading-piano-level-1-new-edition/p/12-0571533116/>
- Amazon.ca (n.d.) *John Kember - piano sight-reading - volume 1: A fresh approach: Kember, John: 9781847611321: Books*. John Kember - Piano Sight-Reading - Volume 1: A Fresh Approach: Kember, John: 9781847611321: Books. https://www.amazon.ca/John-Kember-Piano-Sight-Reading-Approach/dp/184761132X/ref=sr_1_2?crid=2IKQOPC0N2BFC&keywords=Piano%2BSight%2BReading%2BVol.1&qid=1694409277&prefix=piano%2Bsight%2Breading%2Bvol%2B1%2Caps%2C106&sr=8-2
- Amazon.ca (n.d.) *Piano Adventures - Sightreading Book - Primer Level: Faber, Nancy, Faber, Randall: Amazon.ca: Musical Instruments, Stage & Studio*. Piano Adventures - Sightreading Book - Primer Level: Faber, Nancy, Faber, Randall: <https://www.amazon.ca/Primer-Level-Sightreading-Piano->

Adventures/dp/1616776307/ref=sr_1_1?crid=251MZVWUJGLW4&keywords=Piano%2BAdventure%2BSight%2Breading&qid=1694409676&sprefix=piano%2Badventure%2Bsig ht%2Breading%2Caps%2C119&sr=8-1

Music for Piano (n.d.) *About the Music for Piano Series*, Retrieved May 20, 2022, from <https://pacepiano-leerobertsmusic.com/pages/about-the-music-for-piano-series>

Piano Adventure (n.d.) *Piano Adventures Primer Level Top 5 things to know*, Retrieved May 20, 2022, from <https://pianoadventures.com/piano-books/basic-piano-adventures/primer/things-to-know/>

Piano Safari (n.d.) *Home – Piano Safari*, Retrieved May 20, 2022, from <https://pianosafari.com>

Piano Town – Methods – Piano (n.d.) *Description*. Retrieved May 20, 2022, from <https://kjos.com/piano/methods/piano-town.html>

The FJH Music Company inc. (n.d.) *Sight reading and rhythm every day, Book 1a from* <https://shop.fjhmusic.com/collections/kevin-olson-publications-1/products/fjh1489>

The FJH Music Company inc. (n.d.). *Sight reading and rhythm every day, Book 2a.* from <https://shop.fjhmusic.com/collections/kevin-olson-publications-1/products/fjh1537>

Video

Musicroom UK, (2017, May 19) *BlitzBooks!:Sight Reading with Samantha Coates* [Video]. YouTube. https://youtu.be/Jp3nff_u9KY?si=0NwRZCc-I7AugDA6

APPENDIX

Appendix A – List of method book series

Title	Level	Authors	Publication Year	Reading Approach
The Music tree	Time to Begin Part 1 Part 2A Part 2B	Clark, Gross, Holland	1955/2000	Intervallic (Johnson, 2010 b, p.44; Ernst, 2010, p.45; Jacobson, 2015, p.38)
Piano discoveries	On-staff stater Level 1A Level 1B Level 2A Level 2B	Vogt, Bates	2001	Middle-C with multikey (Johnson, 2010 a, p.28)
Celebrate piano! – Lesson & musicianship	Level 1A Level 1B Level 2A Level 2B	Albergo, Mitzi Kolar	2003	Eclectic (Johnson, 2010 d, p.34; Singleton, 2010, p.36)
Piano town	Primer Level 1 Level 2	Snell, Hidy	2004	Multi-key (Johnson, 2010 c, p.34; Jacobson, 2015, p.37) “A multi-key method with an intervallic concentration” (https://kjos.com/piano/methods/piano-town.html)
Alfred’s premier piano course - Lesson	Book 1A Lesson Book 1B Lesson Book 2A Lesson Book 2B Lesson	Alexander, Mier	2005	Eclectic (Jacobson, 2015, p.38) “Emphasis on performing rhythms in patterns” (Lancaster, 2010 p.50)
Music for Piano	Kinder-Keyboard, Book 1 Book 2	Pace	1977/2006	Multi-key (Johnson, 2011b, p.42) “learn to recognize melodic patterns” (Lovison, 2011, p.46) “True multi-key experience” (https://pacepiano-leerobertsmusic.com/pages/about-the-music-for-piano-series)
Succeeding at the piano – Lesson & technique	Preparatory Grade 1A Grade 1B Grade 2A Grade 2B	Marlais	2010	Eclectic (Johnson, 2011a, p.32; Jacobson, 2015, p.38) “Learn to read patterns” (Marlais, 2011, p.47)
Piano adventure - Lesson	Primer, Level 1 Level 2A Level 2B	Faber, Faber	1993/2011	Eclectic (Jacobson, 2015, p.38) “short rhythm patterns help students visually chunk groups of notes” (source: https://pianoadventures.com/piano-books/basic-piano-adventures/primer/things-to-know/)

Piano safari	Repertoire Level 1 Repertoire Level 2	Fisher, Knerr	2014	Intervallic (Johnson, 2017, p.29) Eclectic (Atkinson, 2017, p.30) "Sequenced, Intervallic Approach" "Patterned pieces" (https://pianosafari.com)
Interactive piano - Lesson	Level 1A Level 1B Level 2A Level 2B	Matz	2016	"Introducing intervals formally in 2A, five- finger patterns; major scale patterns" (Johnson, 2018 p.27-28)

Appendix B – List of sight-reading book series

Title	Level	Authors	Publication year	Publication description
Piano sight-reading Vol 1.: A fresh approach	Volume 1	Kember, John	2004	“An approach based on self-learning and the recognition of rhythmic and melodic patterns” (Publication description from Amazon.ca)
Alfred’s premier piano course: Sight-reading	Level 1A Level 1B Level 2A Level 2B	Matz, McArthur	2005	“Students play patterns with steps, skips and repeated notes from landmark notes” “Rhythm patterns” (Matz & McArthur, 2005, p.2)
Improve your sight-reading!	Level 1 Level 2	Harris	2008	“Rhythmic and melodic exercises” (Publication description from Alfred Music)
Piano adventure: Sight-Reading	Primer Level 1 Level 2A Level 2B	Faber, Faber	2011	“Exercises based on melodic and rhythmic pattern” (Publication description from Amazon.ca)
Sight-Reading and Rhythm Every Day	Level A Level B Level 1A Level 1B Level 2A Level 2B	Olson, Marlais, Olson	2012	“Interval recognition”, “pattern identification” (Publication description from FJH Music)
Piano safari – Pattern Piece	Book 1 Book 2	Fisher, Knerr	2014	“Pattern based piece.” (Publication description from pianosafari.com)
How to blitz! Sight-reading	Level 1	Coates, Madder	2016	Patterns, notes readings, rhythms, melodies (Musicroom UK, 2017, BlitzBooks!:Sight Reading with Samantha Coates, YouTube)

Appendix C – Melodic Pattern Reinforcement in each level from the method book series

C – 1. The Music Tree series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
<i>Time to Begin</i>	2nd	Interval (Conventional)	3
	3rd	Interval (Conventional)	6
	4th	Interval (Conventional)	2
<i>Part 1</i>	2nd	Interval (Conventional)	3
	3rd	Interval (Conventional)	2
	4th	Interval (Conventional)	2
	5th	Interval (Conventional)	2
	Harmonic 5th (5H)	Interval (Conventional)	3
<i>Part 2A</i>	2nd	Interval (Conventional)	2
	3rd	Interval (Conventional)	2
	4th	Interval (Conventional)	2
	5th	Interval (Conventional)	2
	Harmonic 5th (5H)	Interval (Conventional)	4
	Major Triad	Chord (Conventional)	2
	Minor Triad	Chord (Conventional)	2
	5H+3H (Harmonic 3rd) +5H	Non-Conventional	3
	1-5-1-5-2-5-2-5-3-5-3-5-2 finger pattern	Non-Conventional	2
	5-4-3-2-1 finger pattern	5-finger scale (Conventional)	2
	1-2-3-4-5 finger pattern	5-finger scale (Conventional)	3
	Major 5-finger pattern (scale)	Major 5-finger scale (Conventional)	3
	Minor 5-finger Pattern (scale)	Minor 5-finger scale (Conventional)	2
	1-2-3-4-5-4-3-2-1 finger pattern	Elaborate 5-finger scale (Conventional)	2
	5-1-4-1-3-1-4-1 finger pattern	Non-Conventional	3
I V I V I V I Broken chord progression	Chord (Conventional)	3	
1-2-3-4-5-3-1-3-5 finger pattern	Non-Conventional	3	
<i>Part 2B</i>	5th	Interval (Conventional)	2
	6th	Interval (Conventional)	9
	Harmonic 6th (6H)	Interval (Conventional)	7
	5H+6H+5H	Non-Conventional	2

1-5-1-5(stretch 6th)-1-5 finger pattern *playing scale degree 1-5-1-6-1-5	Non-Conventional	2
1-2-3-4-5-4-3-2-1-1-1 finger pattern	Non-Conventional	5
4-3-2-1-2-3-4-5/ 2-3-4-5-4-3-2-1 finger pattern	Non-Conventional	3
3-2-1-2-3-4-5-4/3-4-5-4-3-2-1-2 finger pattern	Non-Conventional	3
2-1-2-3-4-5-4-3 finger pattern	Non-Conventional	3
3-2-1-2-3-4-5-4-3-2-1 finger pattern	Non-Conventional	3
Frolic	Non-Conventional	5
High Dive: Full scale ascending & descending	Scale (Conventional)	5
Playing scale with harmonic 6th (6H)	Non-Conventional	2

C – 2. The Piano Discoveries series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Prep (On Staff Starter)	Skip	skip (Fundamental)	2
Level 1A	2nd	Interval (Conventional)	3
	Harmonic 2nd (2H)	Interval (Conventional)	2
	3rd	Interval (Conventional)	3
	Harmonic 3rd (3H)	Interval (Conventional)	2
	4th	Interval (Conventional)	5
	Harmonic 4th (4H)	Interval (Conventional)	2
	5th	Interval (Conventional)	5
	Harmonic 5th (5H)	Interval (Conventional)	2
	5-finger Position (scale)	Scale (Conventional)	3
Level 1B	5th: 1-5-1-5	Interval (Conventional)	2
	5-finger position (scale)	Scale (Conventional)	2
Level 2A	6th	Interval (Conventional)	3
	Broken Triad: 1-3-5	Chord (Conventional)	2
	Blocked Root position Triad - I	Chord (Conventional)	3
	Blocked 1st Inversion	Chord (Conventional)	2
	Blocked 2nd inversion	Chord (Conventional)	2
Level 2B	Blocked Root position Triad - I	Chord (Conventional)	3
	Blocked 1st inversion	Chord (Conventional)	3
	Blocked 2nd inversion	Chord (Conventional)	4
	Blocked Major IV	Chord (Conventional)	2
	Blocked Major V	Chord (Conventional)	2
	Blocked V - 1st inversion	Chord (Conventional)	2
	Blocked V7 - 3 notes form	Chord (Conventional)	3
	Blocked V7 - 4 notes form	Chord (Conventional)	2
	Full Major scale	Scale (Conventional)	3
	I-IV-I-V-I Chord progression	Chord (Conventional)	4

C – 3. The Celebrate Piano series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Book 1A	None: No specific reminders		
Book 1B	2nd	Interval (Conventional)	2
	3rd	Interval (Conventional)	2
	Middle C Pattern	repeat (Fundamental)	4
	Busy Bee	Interval (Conventional)	3
	Cuckoo Bird	Non-Conventional	3
Book 2A	Middle C Pattern	repeat (Fundamental)	4
	Busy Bee	Interval (Conventional)	4
	Cuckoo Bird	Non-Conventional	4
	Kangaroo Song	Non-Conventional	4
	Owl Song	Non-Conventional	4
	1-2-3-4-5 (5-finger pattern: scale)	Scale (Conventional)	2
	1-3-5 (5-finger pattern: chord)	chord (Conversional)	2
Book 2B	Middle C Pattern	repeat (Fundamental)	7
	Busy Bee	Interval (Conventional)	7
	Cuckoo Bird	Non-Conventional	7
	Kangaroo Song	Non-Conventional	7
	Owl Song	Non-Conventional	7
	Elephant song	Non-Conventional	3
	5-4-3-2-1 (5-finger pattern: scale)	Scale (Conventional)	2
	Donkey Song	Non-Conventional	2

C – 4. The Piano Town series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Primer	Step	Step (Fundamental)	4
	3rd	Interval (Conventional)	3
	4th	Interval (Conventional)	3
	5th	Interval (Conventional)	3
Level 1	None: No specific reminders		
Level 2	4th	Interval (Conventional)	2
	5th	Interval (Conventional)	2
	6th	Interval (Conventional)	4
	Harmonic 6th (6H)	Interval (Conventional)	2
	7th	Interval (Conventional)	2
	Harmonic 7th (7H)	Interval (Conventional)	2
	Blocked Root position Major Triad - I	Chord (Conventional)	4
	Blocked Root Position Minor Triad - i	Chord (Conventional)	2
	Blocked IV chord	Chord (Conventional)	6
	Blocked V	Chord (Conventional)	4
	Blocked V7 - 3 notes form	Chord (Conventional)	2
	5-finger minor scale	Scale (Conventional)	3
	Full major scale	Scale (Conventional)	4

C – 5. The Alfred’s Premier Pian Course series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Book 1A	step	step (Fundamental)	3
	skip	skip (Fundamental)	3
	1-5-5H (Harmonic 5th)	Non-Conventional	2
Book 1B	half step	step (Fundamental)	2
	1-3-5 3 note skips	chord (Conventional)	3
	1-2-3-4-5 5-finger steps	Scale (Conventional)	3
Book 2A	1-2-3 ascending	Non-Conventional	2
	3-2-1 descending	Non-Conventional	3
Book 2B	5-finger major scale	Scale (Conventional)	2
	5-finger minor scale	Scale (Conventional)	2

C – 6. The Music for Piano series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Kinder-Keyboard	None: No specific reminders		
Book 1	Repeat	Repeat (Fundamental)	6
	Step	Step (Fundamental)	3
	Skip	Skip (Fundamental)	4
	Scale degree 4-3-2-1	Non-Conventional	2
	Scale degree 1-2-3-4	Non-Conventional	2
	Blocked Major Triad	Chord (Conventional)	3
	Broken Major Triad - I	Chord (Conventional)	3
	"Skip and Step"	Non-Conventional	2
	"Old Woman"	Non-Conventional	2
Book 2	Blocked minor triad - i	Chord (Conventional)	2
	Blocked Major Triad - I	Chord (Conventional)	2
	Dorian mode scale	Scale (Conventional)	2

C – 7. The Music for Piano series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Prep	Repeat	Repeat (Fundamental)	2
	2nd	Interval (Conventional)	6
	3rd	Interval (Conventional)	5
	4th	Interval (Conventional)	2
	5th	Interval (Conventional)	4
	8th (Octave)	Interval (Conventional)	2
Grade 1A	Skip	skip (Fundamental)	5
	2nd	Interval (Conventional)	5
	4th	Interval (Conventional)	3
	5th	Interval (Conventional)	2
Grade 1B	3rd	Interval (Conventional)	3
	Blocked V7 - 2 note form	Chord (Conventional)	3
	Blocked major triad - I	Chord (Conventional)	6
	Broken major Triad - I	Chord (Conventional)	5
	1-2-3-4-5: 5-finger pattern (ascending scale)	Scale (Conventional)	3
Grade 2A	Broken Major triads (Arpeggio)	Chord/ Arpeggio (Conventional)	2
	Blocked major triad - I	Chord (Conventional)	3
	1-2-3-4-5: major 5-finger pattern (ascending scale)	Scale (Conventional)	6
	1-2-3-4-5: minor 5-finger scale	Scale (Conventional)	2
Grade 2B	6th	Interval (Conventional)	2
	Blocked major triad - I	Chord (Conventional)	3
	Broken major Triad - I	Chord/ Arpeggio (Conventional)	2
	Blocked V7 - 2 note form	Chord (Conventional)	3
	I V7 I Chord progression	Chord (Conventional)	6
	1 octave major scale	Scale (Conventional)	6

C – 8. The Piano Adventure series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Primer	Step	step (Fundamental)	2
	Skip	skip (Fundamental)	4
Level 1	Half steps	step (Fundamental)	2
	Step → 2nd	Interval (Conventional)	3
	Skip → 3rd	Interval (Conventional)	4
	Blocked major triad - I	Chord (Conventional)	3
	Broken major triad - I	Chord (Conventional)	4
	1-2-3-4-5: 5-finger scale	Scale (Conventional)	4
Level 2A	Half steps	step (Fundamental)	2
	Blocked major triad - I	Chord (Conventional)	4
	Blocked V7 chord - 3 notes form	Chord (Conventional)	2
Level 2B	Blocked V7 chord - 2 notes form	Chord (Conventional)	2
	Blocked major triad - I	Chord (Conventional)	5
	Blocked V7 chord - 3 notes form	Chord (Conventional)	5
	Blocked IV chord 2nd inversion	Chord (Conventional)	4
	Broken IV chord 2nd inversion	Chord (Conventional)	3
	I-V7 (2 note form): Chord progression	Chord (Conventional)	2
	I V7 (3 notes form): Chord progression	Chord (Conventional)	2
	1 octave major scale	Scale (Conventional)	2

C – 9. The Piano Safari series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Level 1	2nd	Interval (Conventional)	5
	3rd	Interval (Conventional)	7
Level 2	2nd	Interval (Conventional)	4
	3rd	Interval (Conventional)	4
	4th	Interval (Conventional)	2
	5th	Interval (Conventional)	3

C – 10. The Interactive Piano series

Level	Patterns (reminded at least twice or more)	Pattern Type	Number of Reminder
Book 1A	Repeat	Repeat (Fundamental)	2
Book 1B	Blocked Triad - I	Chord (Conventional)	2
	Broken Triad - I	Chord (Conventional)	2
Book 2A	2nd	Interval (Conventional)	2
	Harmonic 2nd (2H)	Interval (Conventional)	2
	3rd	Interval (Conventional)	2
	Harmonic 3rd (3H)	Interval (Conventional)	2
	4th	Interval (Conventional)	2
	Harmonic 4th (4H)	Interval (Conventional)	2
	5th	Interval (Conventional)	2
	Harmonic 5th (5H)	Interval (Conventional)	2
	6th	Interval (Conventional)	2
	Harmonic 6th (6H)	Interval (Conventional)	2
	Blocked Triad - I	Chord (Conventional)	3
	Broken Triad - I	Chord (Conventional)	3
	Blocked V7 - 3 notes form	Chord (Conventional)	2
	Major scale	Scale (Conventional)	2
Book 2B	Blocked Major Triad - I	Chord (Conventional)	3
	Blocked minor Triad - I	Chord (Conventional)	2
	Broken Major Triad - I	Chord/Arpeggios (Conventional)	4
	Broken minor Triad - i	Chord/Arpeggios (Conventional)	3
	Broken V7 - 3 notes form	Chord (Conventional)	2
	Major scale	Scale (Conventional)	3

Appendix D – Visual Cues from the selected Method book & Sight-Reading book series

Types of Visual Cues	(1) Phrase marks (slurs)	(2) Fingerings		(3) Brackets or circles	(4) Symbols for Phrase Beginning/Ending or new hand positions	(5) Rest & Register	(6) Roman numeral chord	Others
		Direct (Patterns)	Indirect (hand positions)					
Method book series	The Music Tree (1951/2000)	v			v (Alert sign)	v		
	Piano Discovery (2001)	v					v	
	Celebrate Piano (2003)	v		v		v		
	Piano Town (2004)	v					v	
	Alfred's Premier Piano Course (2005)	v	v (w/ red circle)		v ("move")	v		
	Music for Piano (1977/2006)	v	v	v				
	Succeeding at the piano (2010)	v		v	v ("move")			
	Piano Adventure (1993/2011)	v	v	v	v ("move", "lift", "echo")		v	v (verbal description of imaginary of musical shape)
	Piano Safari (2014)	v	v					
	Interactive Piano (2016)	v	v		v (clip art)			
Sight-Reading book series	Piano Sight-Reading (2004)	v		v				v (line indication)
	Alfred's Premier Piano Course: Sight-Reading (2005)	v			v ("move")			
	Improve your Sight-Reading (2008)	v						
	Piano Adventure: Sight-Reading (2011)	v				v	v	v (altering articulation: slur & staccatos)
	Sight Reading & Rhythm Every day (2012)	v		v				
	Piano Safari: Pattern pieces (2014)	v	v			v		v (grouping note names)
	How to Blitz Sight-Reading (2016)	v				v		