Chapter 12
Exploring the Dimensions of Interest Sustainability (5Cs Framework): Case Study of Nathan

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Abstract This chapter explores the dimensions of how interest can be sustained in learners. Using the case study of Nathan, we trace his interest development journey in art and music within a Singapore school context. We suggest a framework that combines both individual psychological aspects of interest development and the impact of the sociocultural environment which includes five dimensions: community, culture, confidence, conflict resolution, and recreating process that are encompassed by the chronosystem. Based on a biblio-narrativical approach, we obtained data via interviews and a retrospective written narrative of Nathan's interest development journey. The data obtained was able to substantiate our hypothesis of the impact the dimensions have on interest sustainability, emphasising the importance of a positive sociocultural environment in interest development and sustainability. This has implications on the role stakeholders such as school management, teachers, peers and parents and also on an individual's interest development. Furthermore, we also established opportunities for innovations afforded by informal learning which adds value to what formal education can provide, creating a more holistic education for learners. Theoretically, the proposed framework extends extant literature on the four-phase model of interest development—which has a more psychological focus—by introducing specific dimensions contributing to interest sustainability through a sociocultural lens. The unification of psychological and sociocultural aspects of interest development would provide a more comprehensive perspective on interest sustainability which would benefit both practitioners and researchers.

12.1 Introduction

Over the years, there has been an increasing interest in the interplay between formal and informal learning. Formal learning is defined as learning that takes place in education and training institutions, leading to the attainment of recognised

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qualifications (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2012). Formal learning situations occur when an agent, such as a teacher, is directing a students' learning through a formalised set of objectives such as curriculum standards (Greenhow & Lewin, 2016).

Non-formal learning occurs in addition to formal learning where one has specific objectives in mind and is actively seeking information from various sources such as peers, mentors or the media (Greenhow & Lewin, 2016). This form of learning usually takes place in community-based settings such as clubs or societies (UNESCO, 2012).

Informal learning is defined as learning that occurs in everyday life (UNESCO, 2012) and is described as spontaneous, experiential and mainly learner controlled, where the learners themselves control their own learning process and goals based on interest (Ferguson, Faulkner, Whitelock, & Sheehy, 2015; Greenhow & Robelia, 2009; Tan, 2013). Authors have also suggested formal learning to indicate learning within classroom settings and informal learning to include everything else outside classroom settings (Reynolds & Chiu, 2013).

This chapter aims to explore the relationships between the formal disciplinary and academic nature of student learning typical of local classrooms and that of informal settings in schools such as cocurricular activities. From the extant literature, these school-based organised activities are "semi-formal" in nature, whereas learning in out-of-school contexts and settings is known as "informal", both of which are important in the holistic development of a child. For the purposes of this chapter, we have appropriated definitions of informal learning in a different way as typically defined in literature. Our definition of informal learning is a combination of the aforementioned definitions of non-formal and informal learning, and we will thus define informal learning as any learning that takes place outside the typical classroom, including contexts such as cocurricular activities, interests and hobbies and involves immersion into the experience, making learning natural and experiential.

Singapore schools are well-organised and robustly structured with a wide variety of programmes and initiatives both in and out of school. However, there is a need for a synergy between the formal academic nature of the school curriculum and that of the informal learning that takes place outside the classroom in order to maximise the effectiveness of these programmes and to prevent the overloading of student schedules.

Hence, it is the intent of this chapter to make explicit how youths engage in interest-based activities with the view of helping teachers and parents to appreciate the multiple identity trajectories of their children and to see intrinsic value in these pursuits. This is also with a view of getting parents to be less anxious about academic studies per se, especially when their children do not always score "top" marks for tests and exams. We argue for a greater awareness of such pursuits as youth's development of these dispositions would potentially benefit them for future readiness within times of rapid uncertainty. We intend to explicate this issue by proposing a framework on interest sustaining—recognising interest as the critical driving force behind learning.

12.1.1 Types of Informal Learning

Over the years, schools and education systems have developed various programmes and activities for students to learn outside the classroom. As such, there is a myriad of opportunities where students can engage in informal learning. One such avenue is through Science, Technology, Engineering, and Mathematics (STEM) programmes. Activities that are detached from real-world issues and life experiences have been found to decrease interest in STEM subjects (Cleaves, 2005). In an effort to narrow this disconnect, after-school STEM programmes have been developed to engage youths through design-based learning, providing students with the time and space required to engage in collaborative and open-ended projects without the stress and constraints of a formal school curriculum (Sahin, Ayar, & Adiguzel, 2014). For example, Studio STEM is an after-school and summer programme in the United States designed to engage middle school youth in STEM (Evans, Lopez, Maddox, Drape, & Duke, 2014). In this programme, the participants were presented with current global issues, of which they were tasked to design and build a product to solve the issue in a free-choice environment made up of various workstations.

An example in Singapore is the implementation of a makerspace in Bright Hill Secondary School (pseudonym). In response to the increasing need for digital skills in the workplace and to improve equity in opportunity for their students, the school made the decision to embark on their pursuit of maker education (Ajam & Lee, 2016). They developed staff development programmes, student activities and the appropriate infrastructure to pilot their maker programme in 2013, achieving a fully functional makerspace in 2015. The makerspace housed tools for fabrication learning such as 3D printers, laser cutters and power tools, which showed the school's commitment to this project. This makerspace ties into their formal curriculum within the craft and technology subjects; however, teachers from other departments such as science and literature have increasingly been using the makerspace for their teaching. In addition, the school organises Maker Thursdays, which is a weekly after-school programme conducted by staff and is free for all students to participate and immerse themselves in a wide variety of activities and interests.

Informal learning can also take place in day-to-day activities. Informal learning occurs in everyday living (UNESCO, 2012), at work, leisure or community. A study done by Pilz and Wilmshofer (2015) in a fishing village concluded that informal learning is central for the youths to pick up skills and knowledge. The girls were involved in household duties and supporting family businesses, while the boys were assimilated into fishing activities at a young age to pick up the skills and experience needed for work. Other examples include the use of social media to discover and share resources for learning and using digital media such as YouTube to support individual learning (Tan, 2013). Although these examples are not exhaustive, a common theme that can be observed is that there is no formal teaching taking place in all the different types of informal learning. Learning is achieved during the process of participation in the activities and immersion into the experience, supporting the definition that informal learning is natural and experiential (Greenhow & Lewin, 2016). One important aspect of informal learning is the concept of play as learning.

12.1.2 Pedagogies of Play and Recreation

Play is the ability to experiment with one's surroundings as a form of problem-solving (Jenkins, Clinton, Purushotma, Robison, & Weigel, 2006), and it creates a means for a child to make sense of his/her world (Samuelsson & Carlsson, 2008). Play can be described via three perspectives (Anderson, 1998): its exploratory nature, evolutionary and intrinsic nature and developmental aspects. The exploratory nature of play is a way for children to discover new experiences and make sense of the world around them. The evolutionary and intrinsic nature of play is seen in its creative aspect, which is unpredictable and open-ended in nature. From a child's perspective, this open-ended nature of play can become inherently rewarding and, eventually, something intrinsically motivated (Anderson, 1998). The developmental aspect of play is the child's social, cognitive language and physical and creative development, which are facilitated during play. It affords a degree of predictability and stability while at the same time allowing spontaneous and fluid behaviours to take place (Stegelin, 2005), allowing the child's time and space to develop and express their creativity and ideas.

The process of play, or "recreating", brings about many benefits. A study by Howe (2016) concluded that children who were engaged in play were observed to have increased motivation, perseverance, enjoyment and a higher level thinking than those who were not. Honeyford and Boyd (2015) did a study on an after-school programme for middle school students which included components of literacy, nutrition and sports. Students were given weekly "quests" leading up to the final product of creating a poster for public exhibition. At the end of the study, the authors found that by allowing students to experiment and play, they cultivated a strong sense of agency and increased their confidence in meaning-making. It also helped to level the playing field between all students, especially those who initially struggled with literacy tasks in school. The students were also focused on the process of learning rather than results due to the low-stake nature of the programme.

As can be seen from the literature and examples above, recreation has a vital role to play in enabling children to make sense of the world around them, develop ownership of their learning and engage in higher level cognitive functioning. These skills are critical in this current age and would benefit youths greatly as they transit from adolescence into adulthood.

12.1.3 Defining "Interest"

Until recently, academics have struggled with coming to an agreement on how best to describe interest, with some describing it as a preference or attitude, passion for learning, an emotion or a motivational belief (Hidi & Ainley, 2008).

There are many definitions of interest and its development that have been suggested by various authors. Schank (1979) defined situational interest as an emo-

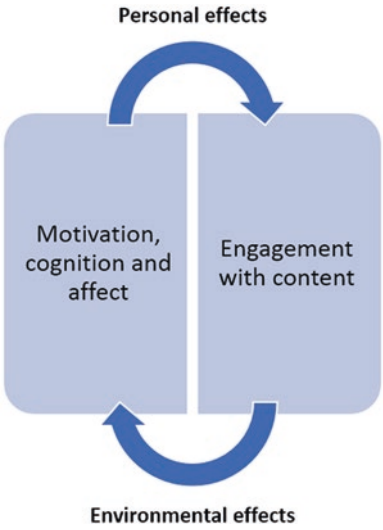

Fig. 12.1 The development of interest. (Adapted from Renninger & Hidi, 2016)

tional state caused by situational stimuli. Schiefele (1991) defines individual interest as having two forms. The first views individual interest as having a relatively long-term trajectory towards an object, activity or knowledge, while the second form describes interest as content specific and intrinsically motivated. Mitchell's (1993) definition refers to interest as tied directly to content and is a phase that is triggered and subsequently sustained. Lent, Brown and Hackett (1994) then suggested that initial emergent interest would lead to goals for increased exposure, increasing the likelihood of subsequent task participation which leads to particular performance attainments. Krapp (2003) conceptualised interest on two levels of analysis. The first level focuses on the interactions between a person and object of interest and posits that the awareness of an interest requires a situation-specific interaction between person and object. On the second level, interest is interpreted as a relatively stable tendency for an individual to sustain interest with an object of interest.

In this chapter, we will define interest according to Renninger and Hidi (2016) as their definition encompasses the constructs of interest from the various authors and converges them into a coherent definition. They frame interest to have a dual meaning, referring to the psychological state of a person engaging in some content, as well as the cognitive and affective motivational predisposition to engage with that content over a period of time. It exists in or is the product of the interaction of the characteristics of the person and the environment (see Fig. 12.1).

Interest as a psychological state relates to a person's physiological or neurological reaction to a myriad of objects such as other people, specific objects and tasks. It is characterised by increases in attention, effort and concentration and affects during engagement with objects of interest. Interest as a motivational variable is content specific and is responsible for the processes of how people feel, engage and act and makes the distinction between shorter-term (situational) interest and longer-term (individual) interest (Renninger & Hidi, 2016). The dual meanings of interest

are interrelated in that a psychological state of interest that is generated may support the development of interest as a motivational variable or how the level of interest as a motivational variable may determine the level of environmental support needed to maintain the psychological state of interest.

The two primary types of interest in education research are situational interest and individual interest (Hidi & Renninger, 2006). Situational interest is described as giving focused attention to and having an affective response, both positive and negative, to a particular activity or content. It is also referred to as the early phase of interest development (Renninger & Hidi, 2016). Individual interest, or a later phase of interest development, refers to a person's relatively enduring predisposition to reengage with a particular activity or content over time. It is usually associated with positive feelings and a recurrent relationship between knowledge and value of the content, whereby the development of knowledge leads to a deepening of value, which would lead to continued engagement and a further deepening of the value (Renninger & Hidi, 2016). Based on the existing literature on interest, Hidi and Renninger (2006) identified four phases of interest and proposed the four-phase model of interest development which have been validated empirically by various studies (Lipstein & Renninger, 2007; Nolen, 2007).

12.1.4 The Four-Phase Model of Interest Development

The four-phase model of interest development positions interest as a psychological state (Hidi & Renninger, 2006) and describes phases of situational and individual interests in terms of affective and cognitive processes, making up the motivational variable of interest (Renninger & Hidi, 2016). The four phases are triggered situational interest, maintained situational interest, emerging individual interest and well-developed individual interest. Their definitions and characteristics are summarised in Table 12.1.

Interest in the earlier phases would require more support from the external environment to develop and maintain interest as compared to the later phases. In addition, without self-generated or environmental support to facilitate continued engagement, it is possible for a person's interest in something to decrease or disappear completely (Renninger & Hidi, 2016). In this chapter, we delve deeper into how interest can be sustained in youths as they participate in various interest-based activities as a result of influences from the sociocultural ecology.

12.1.5 Current Gaps in Literature

The extant literature has been studying interest mainly from a psychological perspective (Barron, 2006; Krapp, 2003; Nolen, 2007; Schiefele, 1991), making it mostly individual focused. It has been observed that the sociocultural environment

Table 12.1 The four phases of interest development

	Phases of interest development			
	Less developed (earlier)	----------▶		More developed (later)
	Phase 1 (Triggered situational)	Phase 2 (Maintained situational)	Phase 3 (Emerging individual)	Phase 4 (Well-developed individual)
Definition	Psychological state resulting from short-term changes in cognitive and affective processing associated with specific content	Psychological state that involves focused attention to a specific content that reoccurs and persists over time	Psychological state and the beginning of a relatively enduring predisposition to seek reengagement with specific content over time	Psychological state and a relatively enduring predisposition to reengage specific content over time
Learner characteristics	• Attends to content, if only momentarily • May need support to engage, from others and instruction • May be reflexively aware of experience • May experience positive or negative feelings • May not persevere in face of challenges • May want to be told what to do	• Reengages content that previously triggered attention • Developing content knowledge • Developing sense of content's value • Likely able to be supported by others to find connections to content based on prior skills and knowledge • Likely to have positive feelings • May want to be told what to do	• Likely to independently reengage content • Has stored knowledge and value • Reflective about content • Focused on own questions • Has positive feelings • May not persevere in face of challenges • May not want feedback from others	• Independently reengages content • Has stored knowledge and value • Reflective about content • Likely to recognise others' contributions to discipline • Self-regulates easily to reframe questions and seek answers • Can persevere through challenges to meet goals • Appreciates and may actively seek feedback

Source: Adapted from Renninger and Hidi (2016)

plays a significant role in interest development (Azevedo, 2011); however, there has been limited in-depth work done that studies the impact of the wider environment. Renninger and Hidi (2016) acknowledge that interest is the product of characteristics of the person and the environment, though the focus of their research is still primarily focused on the psychological states of an individual with limited emphasis on the environment.

There have been some studies done on the impact of learning environments on interest development (Baumert & Koller, 1998; Del Favero, Boscolo, Vidotto, & Vicentini, 2007; Stegelin, 2005) which trace the influence of components of the learning environment such as learning activities and specific topics taught and how it affects interest development. However, these studies are specific to learning environments such as classrooms. As such, there is still a lack of research in the area of how the wider sociocultural environment influences interest development.

12.1.6 Benefits of Interest-Driven Learning: Why Is It Important?

Research has shown that there are many benefits of interest to learning not only affecting learning outcomes positively but learning processes as well (Lipstein & Renninger, 2007). Studies have found that as individuals develop an interest in a specific discipline or content, there is an observable improvement in their performance (Hulleman, Godes, Hendricks, & Harackiewicz, 2010). Depending on their level of development of interest, individuals have been observed to persevere more in seeking to deepen their understanding of their area of interest, leading them to be more proactive in seeking feedback from others and sourcing for additional resources to learn and to create opportunities for themselves that enable them to better engage in their interests (Lipstein & Renninger, 2007). This would eventually lead to the development of a deeper conceptual understanding of the interest area and content (Schiefele, 1999). In addition, when individuals have an interest in a specific task or content to be learnt, they have more focused attention (Ainley, Hidi, & Berndorff, 2002) on the task, as well as better learning strategies being employed to enhance their learning (Schiefele, 1999). As a result, the individual would develop a higher degree of self-efficacy (Kim, Jiang, & Song, 2015) and be able to self-regulate their interest and motivation in pursuing the topic of interest (Sansone, Fraughton, Zachary, Butner, & Heiner, 2011).

Therefore, as youths participate in activities that engage them and develop their interests, they will be intrinsically motivated to further their learning. Through this process, they will be able to cultivate various skills and competencies that are of intrinsic value to the individuals and which help them mature in their identity formations.

12.1.7 The Singapore School Context

In the Singapore context, pursuing academics for students is deemed important, as reflected by the Singapore education system's reputation for being highly competitive and highly focused on examination grades (Teng & Yang, 2016). While this pursuit of good grades is the focus of majority of schools and students, it might not suffice for them to mature in their identity formation (Hung, Lim, & Jamaludin, 2011). There is a need to have variations in identities afforded by differing places and processes. As such, encouraging youths to participate in multiple and varying contexts both in and out of school should facilitate rather than detract them from a holistic learning experience and development.

Students in Singapore spend a significant proportion of their time outside the formal curriculum, taking part in activities characterised by uniform groups, sports and clubs, such as robotics (Lee, 2014). Singapore schools are also encouraged to develop unique niche areas to develop twenty-first-century learning opportunities. For instance, there are an increasing number of secondary schools incorporating "maker education" into their curriculum which have set up makerspaces for students to tinker with various equipment and materials (Ng, 2016). Singapore's Ministry of Education (MOE) is also offering an annual fund of S$50,000 to secondary schools to develop STEM Applied Learning Programmes (ALP), aimed at bridging the gap between science knowledge and real-world application (Ng, 2016). Fullan (2001) states that the fundamental purpose of education is to make a positive difference in the lives of students and to cultivate citizens who are able to live and work productively in a progressively dynamic and complex society. By being involved in these programmes, Singapore students will be able to better apply their knowledge into real-world contexts, becoming productive citizens of the country.

12.1.8 5Cs Framework of Interest Sustaining

As previous studies have been studying interest from a psychological perspective, we would like to examine it from a sociocultural perspective and attempt to integrate both the sociocultural aspect and psychological aspect of interest development in youths. Our framework will thus attempt to fill the gaps in literature by expounding the impact of the sociocultural environment on interest development and sustainability.

In our suggestive framework, the "5Cs framework for interest sustaining", we postulate that in order for youths to sustain their interest in a specific content or activity, they require five characteristics as shown in Fig. 12.2., community, culture, the (re)creating process, confidence and conflict resolution/management, which are bound by time or the chronosystem. This framework ties together different strands of interest research and various studies which have identified the above characteristics, the details of which will be elaborated below. This framework thus offers us a

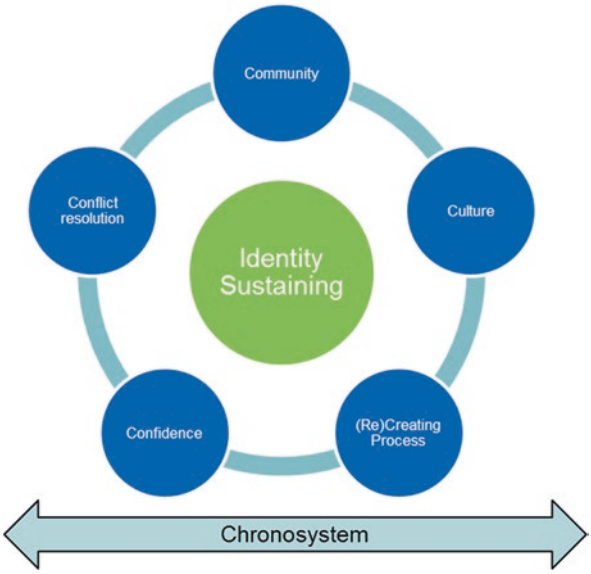

Fig. 12.2 Framework for interest sustaining

sociocultural lens to determine what environmental factors influence (or hinder) interest. It describes five essential characteristics that contribute to the sustainability of interest in youths, and we hypothesise that all five of these dimensions are necessary for youths to sustain interest in a specific activity or content over time.

12.1.8.1 C1: Community

We refer to community as the social environment or group(s) of people that have a direct influence and impact on an individual's participation in an activity of interest. This encompasses characteristics such as whether the environment is supportive or not, other's recognition and acceptance and the general characteristics of the people within the group itself, such as the teachers, mentors, peers or competitors. As stated by Greeno, Collins and Resnick (1996), "Effective learning involves being strongly engaged in activities that capture the learner's interests because of their intrinsic qualities as well as participation in communities" (p. 26). However, if the community is not a supportive one, there may be an adverse impact on the individual's interest development.

Bandura (2001) states that when there is a strong perceived collective efficacy or collective performance, the group would have higher aspirations, motivation, perseverance in face of obstacles, morale, resilience and overall greater performance accomplishments. Therefore, having a community of people with the same interest would be of great value in traversing the journey of interest development to mutually motivate one another and persevere through obstacles and setbacks.

12.1.8.2 C2: Culture

Culture is the proliferation of the interest activity outside of the four walls of the school or classroom, forming threads between school, home and the wider community. This involves fostering a culture of interest development and making this interest relevant in the daily lives of the individual. A question that Azevedo (2011) asks concerning sustaining interest is how much an interest activity is continuously made relevant to an individual's life. This is aligned with what was suggested by Brophy (1999) that if specific topics can be easily linked with everyday experiences, they may represent a source of situational interest. We suggest that culture is context specific, and every context has their own culture of whether interest is encouraged or not. For instance, in a classroom setting, the teacher would most likely be the one who sets the culture of whether the students are encouraged or given the space and opportunity to develop their interests. At home, it could be the parents who set the culture, which can be influenced by financial ability or their own interest in the subject matter.

Interest-driven learning activities are boundary-crossing and self-sustaining, comprising of multidirectional relationships between learning activities across contexts (Barron, 2006). An interest sparked at school may be followed up by new knowledge-producing activities at home or at a workshop, leading to the development of that interest. Activities that are able to stretch across sites and communities of practice, such as between the classroom and home environment, are more likely to lead to the development of interest and are critical for the sustainability of this interest (Pressick-Kilborn & Walker, 2002).

In order for youths to sustain an interest over time, there needs to be a culture that enables and encourages them to engage in their interest activity. This culture cannot be determined solely by the teacher or parent alone, but it has to be nurtured across all aspects of their lives in order for the interest to become self-sustaining.

12.1.8.3 C3: Confidence

Confidence refers to how self-assured the youth is in their ability to achieve or contribute to an activity or content of interest. This can be in the form of self-efficacy and self-esteem. Zimmerman (2000) defines self-efficacy as a person's judgement of one's own capabilities to organise and execute courses of action in order to attain designated goals. The fact that interest is always directed towards a specific object (Krapp, 2003) such as a particular hobby or topic and that literature has recognised that self-efficacy is domain specific (Bandura, 2001) ties both self-efficacy and interest together in a robust relationship. Furthermore, self-efficacy has been identified as an important characteristic of the various phases of interest within the four-phase model of interest development (Hidi & Renninger, 2006).

Other than simply focusing on the individual, this component also considers external influences such as any factors which may demean or lower the confidence of the youth such as overstressing standards that may be unmeasurable or having

unsupportive teachers or peers. External support that is content specific has been found to be crucial in the early phases of interest development, and it is during these early phases that teachers play a significant role in supporting students and developing their sense of self-efficacy (Eccles et al., 1993). Hidi and Renninger (2006) state that a teacher's continued support of students' feelings of self-efficacy is important in the development and sustaining of interest in students, emphasising the important role a teacher or mentor plays in the sustainability of interest.

12.1.8.4 C4: Conflict Resolution

Conflict resolution is the ability of the individual to overcome challenges and constraints in the course of pursuing their interest. This component is in a similar vein to conditions of practice, which is described as any constraints or affordances of practice within different sites of practice such as circumstances of the individual's life, social, cultural and institutional spaces (Azevedo, 2011). This component is linked to the previous component of confidence and self-efficacy, as self-efficacy beliefs determine the challenges undertaken, how long individuals are able to persevere in face of challenges and whether failures motivate or demoralise them (Bandura, 2001).

We suggest that there are mechanisms of conflict resolution that determine how well youths respond to conflict and constraints. These mechanisms can be categorised into individual and collective factors. The individual aspect relates to individual traits of perseverance and tenacity, which is the ability to accommodate to challenges (O'Dougherty, Masten, & Narayan, 2013). The collective aspect refers to the communal and intentional effort from schools, teachers and parents to help the individual overcome these challenges, and they can be in the form of school policies or structures. For instance, when a youth faces challenges without support from the school or teachers, he/she may not know how to properly manage and rise above the obstacle, leading to discouragement and eventually loss of interest. On the other hand, if proper guidance and support is given, that same youth will be able to manage the challenge well, gaining confidence as well as an increase in interest.

Different youths have different confidence and conflict management limits, and we hypothesise that the aforementioned mechanisms for conflict resolution have to be present in order for interest to be sustained.

12.1.8.5 C5: (Re)Creating Process

Without opportunities to deepen and develop interest, even well-developed interest may become dormant or die off (Renninger & Hidi, 2016). The recreating and re-creating process are opportunities for interest to be developed. These come in the form of recreation and competition. As mentioned earlier, recreation involves play, which would afford youths with the opportunity for them to pursue their interests without the high stakes of academic exams and in a relaxed environment. This is

important in allowing them to develop intrinsic motivation, skills and creative thinking. However, if there is no competition at all, we hypothesise that the individual may be too relaxed and as such has no motivation to engage and develop in the activity of interest leading to stagnation. On the other hand, if competition is too intense, interest may be diminished due to the overly stressful nature of the activity. This dimension will provide a novel perspective to interest development theory as there have not been studies which examine the impact competition has on interest development and sustainability over time.

12.1.9 Chronosystem: The Effect of Time

The 5Cs are encompassed by an additional dimension of time, the chronosystem, which weaves through all five elements of interest sustainability. The chronodimension includes external elements such as the timing of a family member's death and internal elements such as physiological changes within the child (Bronfenbrenner, 1989). As the framework highlights how interest is sustained over time, the chronodimension is apt in accounting for the effects of time on the situational circumstances of the learner.

12.2 Methodology

The case study adopts a narrative inquiry approach where the participants at hand engage in a biblio-narrativical approach in reflecting their learning experiences both in the formal and semi-formal learning school contexts. Narrative inquiry uses stories, autobiographies, journals and other documentation of life experiences as the unit of analysis to understand the ways people create meaning in their lives as a research process (Clandinin & Connelly, 2000).

The researchers interviewed the participant and gained further details of his interest development process through narratives such as a written narrative of his journey over time. We posit that from the youths' lived experiences point of view, there should be many such manifestations of factors of interest sustaining which come into play, which may not be well-documented. Neither is it easy for researchers to have access to such manifestations. Hence, a biblio-narrativical method is recommended for this study.

This case study on Nathan was based on interviews with him, as well as a retrospective written narrative of his experiences and interest development journey across the schools and years of his secondary school life. The interview data was collected based on face-to-face interviews conducted with the researcher, which were recorded with a voice recorder and subsequently transcribed. The transcripts were then analysed via thematic analysis of data codes to identify emergent themes. Some of the questions asked include "You mentioned that you lost interest in art

because of the competitive nature of the school. Why?", "How did your peers, teachers and parents influence your interests?" and "Did you face any challenges while pursuing your interests? How did you overcome them?" Nathan also provided a written piece of his reflections tracing his experiences in art and music from when he was a young boy to the present day. The main question given to him was to write about his education journey and trajectory of his art and music interest, and he was given the freedom to express this writing. The written piece was then analysed to draw out his thoughts and reflections on topics which were discussed during the interviews which he may not have mentioned at that time.

12.3 Case Study of Nathan

Eighteen-year-old Nathan (pseudonym) grew up in the Singapore education system. He has completed his secondary school education and has obtained admission into a local university. He is interested in art and music. His interest in art and drawing began at the early age of 3 years old where he would take an interest in and attempt to illustrate things which caught his attention, ranging from people to animals. This interest in drawing not only endured over the years as he grew up but flourished at every stage of his growth. Even though he never went for any art classes, he made use of every opportunity to do drawings and sketches.

At the end of his primary school education, he enrolled into a specialised arts school, which combined academics with a focus on arts education. The school consisted of a 4-year foundation programme, leading up to a 2-year International Baccalaureate (IB) programme. In the first 2 years in the school, he learnt the foundations of making art and enjoyed himself while at the same time achieving good grades. However, this changed as he entered the next 2 years of his education. The demands from the coursework increased substantially, and the requirements of their work are becoming more stringent and challenging, causing Nathan to struggle with meeting these requirements. Due to the lack of guidance and support from the teachers and peers, art suddenly became pressurising for him which affected his confidence in making art.

At that same time, Nathan began developing a fondness for music, with a particular interest in guitar. He started to be exposed to different artistes and genres in music, and his parents bought him a beginner's guitar and signed him up for music lessons. His guitar teacher taught him the basics and exposed him to a wide range of genres of music, encouraging him to keep making music. The music lessons ended about a year and a half later, but he continued learning the guitar, slowly developing an interest in singing and songwriting, as well as knowing and gaining inspiration from all the great guitar players.

At the end of his fifth year in the arts school, Nathan was informed that he would not be able to progress to the final year because his academic results did not suffi-

ciently meet the prescribed standards. The institutional demands of the school created a conflict within Nathan's microworld of learning which he was unable to overcome. Even though he persevered to work hard to resolve this conflict by putting in hours of work into his study and projects, he was still unable to meet the institutional demands. Furthermore, there was a lack of collective conflict resolution mechanisms such as a lack in teacher or school leader support, which discouraged him and subsequently attributed to his loss of situational interest in making art.

As a result, his parents approached another school which was open to allow him to complete his final year of IB there. The vice-principal was impressed with Nathan's grades from the previous school, which helped him gain an interview and eventually acceptance into their school to complete his final year there. This final year in the new school greatly impacted his life, especially in the areas of his interest in art and music. The new school had a positive and supportive community, nurturing teachers and many opportunities for him to further engage his passions in both art and music.

Based on our earlier definitions, in this case study of Nathan's interest trajectory, his art education within the classroom would be defined as formal learning, and learning music as his hobby/interest is classified as informal learning.

12.3.1 C1: Community

The role of community greatly affected Nathan's passion for art and music. The community in the first school was not a positive one for Nathan, and this led him to lose his passion and interest in art. He felt that the mentors and peers were overly critical and one instance greatly affected his interest for art. Nathan mentioned an instance when a mentor said to him that his "artwork is like primary school work", which led him to feeling "absolutely crushed that day, and I told myself to never do art again". Furthermore, he mentioned that "a lot of people were like cynical and critical and people judged very easily".

On the other hand, in the new school, he found the community to be much more accepting and supportive, as he recounted that "The community (friends, teachers) managed to assimilate myself with the school quickly". He also found a group of peers who had similar interests in making music in the contemporary band cocurricular activity (CCA), which motivated him to pursue his interest in music further because they "had that common interest". He was also given the recognition from his peers that he had talent in playing the guitar, which encouraged him to continue pursuing his passion in music.

"I had people around me like schoolmates; they see me perform around the canteen and say 'hey you're good'. These sorts of comments encourage me to continue my passion. So I've been blessed with a community around me that has been supportive in what I do."

12.3.2 C2: Culture

In the first school, Nathan expressed that there was a negative and overly critical culture, which may have contributed to his loss of interest in art. There was a great focus on completing assignments and projects, without much time to truly allow art to permeate their lives.

> I think for an art school, it didn't have the culture. I'm not sure whether the issue was how it ran, I think it was just the culture that didn't allow time to develop… Live art. I mean, we were all very busy.

The new school had a culture which encouraged the students to pursue their interests and nurture well-rounded students. Nathan mentioned that "every platform I did perform ever before… are somewhat affiliated to the school", which exemplifies how the school has a culture that provides a platform for Nathan to pursue his interest in music. His art teacher also shaped his interest in art by inspiring him and making art relevant with the world today.

> Having a lot of these outside class discussions about art, what art should be and maybe like world issues sort of lead me to inspire to become like him one day... And it's just these inspirations, the people around you, that shape your interest… It's like a whole culture.

12.3.3 C3: Confidence

Over the course of his pursuit of art, Nathan met with various instances which affected his self-confidence in his artistic ability. In his third and fourth year in the art school, there was a significant increase in the standards required of the students, which added to the pressure of creating good art. He struggled to catch up with the increased workload and demands to the point where his confidence was shaken, making remarks such as "my artwork was not very impressive" and "my (creative) process was terrible". Furthermore, he did not receive much support and encouragement during that time, and he even came to the point of despising his art. As art was subjective, there were no clear standards that Nathan could work towards, further decreasing his confidence in being able to produce good art.

> A lot of people were pretentious, they criticise my art, and I just didn't know what was good art and bad art…

This downward trend was reversed when he entered the new school. He had a new art teacher who was "helpful and nurturing" and who explained to him the "depths and context of different artworks and artists". As a result of this, Nathan began to like art again, and through this teacher's mentorship, he was able to "truly think like an artist", which was when his "confidence in making and creating started to flourish" again.

His confidence in music also grew when his band from the contemporary band CCA won the first place in a talent show at his school, which further boosted his confidence as it was "one of the proudest moments of (his) life". Following that, he also began receiving more affirmation on his music skills from his peers with comments such as "Nathan's good at playing guitar" and "Nathan can sing".

12.3.4 C4: Conflict Resolution

An initial constraint that Nathan faced in his pursuit of music was that even though he was able to attend beginner guitar lessons initially, he had to stop them as it was financially taxing on his parents. However, he was able to overcome this constraint by taking the initiative to continue learning guitar on his own, improving his skills and increasing his exposure to music in the process.

With regard to Nathan's interest in art, the first school had a structure where the students were made to constantly work on projects. Together with the lack of guidance, it caused him to lose interest in making art.

> I didn't really enjoy what I was doing. Especially in school when project after project you have to come up with an artwork. Maybe it was lack of guidance, I don't know. That sort of bummed me out. I didn't really want to produce any more. I just didn't have any motivation to produce any more art.

In the second school, Nathan's teacher mentor provided support and the right "push" to encourage him towards creating good art whenever he meets with difficulty in creating art and is stuck along the way.

> It's only when my mentor sort of pushes me to a certain direction, and then I am more confident on like what to do and then I think the artwork turns out great in a sense.

12.3.5 C5: (Re)Creating Process

The impact of the recreating and re-creating process can be seen in Nathan's experiences in both art and music. In music, Nathan was "addicted to it" from the very first instance when he picked up the guitar and began playing. He would be "literally lying on (his) parents' bed watching TV, just strumming…" which forms part of his recreation. Other than that, he also took part in talent competitions and performances, which afforded him the platform to improve his skills while gaining exposure to wider audiences. It was also through this platform that the rest of the school acknowledged his talent in music, encouraging him to further pursue this interest.

With regard to his interest in art, Nathan had an interest in art since young, and his passion for it continued to grow throughout the years as it was mainly a recreational hobby. He would feel a sense of fulfilment when he completed a drawing,

which kept his passion growing. Generally, he felt that art should not be made into a competition as there are no fixed criteria that it can be objectively based on, as art itself is subjective.

> Competition in sports make[s] sense…It follows a set of rules and how you are at it defines how accomplished you are. Art is different… I think from a young age, I got a wrong idea of what art was, and that everything was a competition. To create is not a competition. It's the expression of your ideas.

12.4 Discussion

In this chapter, we introduced a framework that offers a perspective on how interest can be sustained in individuals. Through a case study of Nathan's journey in discovering and developing his interests, we used the lens of the "5Cs framework of interest sustaining" to draw out how these five dimensions amalgamate to contribute to Nathan's sustained interest and development in the arts and music.

From our study, we found that all five dimensions play an important role in determining the development and sustainability of interest in an individual. Overall, the findings from this case study illuminate the importance of a positive environment, which has an impact on all five dimensions of the framework. Even dimension C3, confidence, which is usually assumed to be an innate or self-generated attribute, is found to be greatly affected by external factors such as the standards of a school, support and encouragement given through the learning process and a nurturing teacher or mentor to walk through the learning process together.

In this case study, we were able to accompany Nathan in his journey of exploring and innovating in his ways of learning in an informal context, which goes beyond the psychological views of the typical interest-driven studies to focus on the sociocultural views of interest-driven learning and how the ecology shapes his innovations in learning. Upon examination of Nathan's journey over the years in secondary school, we observed two contrasting environments from the two schools, which illustrated how environments affected the five dimensions and ultimately interest sustainability.

In the first school, Nathan felt that the community within the school was overly critical and judged quickly, which made him feel demoralised and inhibited his development of interest in art. The culture was also still overly focused on completing assignments instead of making art relevant to their lives. Over time, his confidence was also affected in such a way where he began to doubt his own artistic capabilities, especially since art is subjective and there are no clear standards that he could refer to. In addition, there was a mismatch in collective conflict resolution mechanisms whereby the school's structure expected students to constantly work on projects with limited guidance, which adversely affected Nathan's interest in art as well. Therefore, even though Nathan had an interest in art since young and he engaged with it as a recreational hobby, this recreating process was affected by all the other factors which eventually took a toll on his interest in art.

In contrast, the second school had a much more conducive environment that sustained interest. The community was more accepting and supportive in helping Nathan assimilate into the new environment, which would have provided a tighter community of support. The culture created by his art teacher also invigorated his interest in art, while the school's culture encouraged holistic growth in students and cultivated his interest in music as well. Through the teacher's mentorship, Nathan regained his confidence in creating art again while at the same time receiving affirmation for his musical ability. Nathan's art mentor in school helped him overcome challenges, facilitating conflict resolution by providing appropriate guidance. This school also facilitated the recreating process as it was not so heavy on assignments and completing projects, which rekindled his passion and interest.

These findings clearly illustrated the important role of stakeholders in schools and the sociocultural environment in influencing students' interest in a particular content, activity and even learning itself. Beginning from school management, we observed the importance of having supportive school leaders who are able to see the potential in students and give them the opportunity to cultivate their potential, such as in the case of the principal of the new school Nathan enrolled in. The school management was also able to create a desirable culture that encouraged and provided a channel for students to discover, pursue and cultivate their interests. Teachers/mentors also played a role in inspiring and encouraging Nathan to pursue his interest in the case of both art and music. His music teacher also encouraged him not to stop making music, which he held closely to and continues to do so until today. Peers played a significant role in determining Nathan's participation in his music. His peers in the contemporary band CCA motivate him to improve his music. Together with positive affirmation and recognition of his musical aptitude, his peers spur him on in pursuing this interest. Lastly, Nathan's parents were pivotal in grooming his interest in music by providing the financial support for his guitar lessons which gave him the foundation to self-learn music and develop his skills as a musician. Therefore, as outlined above, we can see how the ecology provides sociocultural affordances which contribute to the shaping of Nathan's involvement and deepening of interest in his music.

From the case study, we can establish some opportunities for innovations afforded by informal learning because it is interest-driven and less high stakes in nature. Firstly, as it is interest-driven, there is a higher motivation to overcome challenges to keep learning and improving. In Nathan's case, even though he had to stop attending guitar lessons, he continued to seek out various ways to learn and improve his skills. This initiative and resourcefulness to seek new learning opportunities diffused to his formal learning in how he found solutions to any problem he faced. Informal learning also provided the opportunity for play and experimentation typically missing in formal, high-stakes learning. Nathan was able to further deepen his learning by participating in the contemporary band CCA which provided him more avenues to play his music but also the opportunity to play with other members in a band, broadening his scope of learning from playing as an individual to collaborating and playing in a band. This form of low-stake, low-stress play affords Nathan with the opportunity to explore different avenues of engaging in his music individu-

ally as well as with his peers, providing him insights on the best ways he can develop his musical talent. Over the course of playing his music, Nathan discovered his own unique style of learning, which he was able to integrate into his own formal learning of academic subjects, such as how he can deconstruct different maths and science algorithms to understand them better. Furthermore, this process had an especially direct and significant impact on his art as they are both creative outlets, which is the sequential process of constructing and developing ideas leading up to the creation of an end product.

Therefore, by leveraging these opportunities afforded by informal learning, there will be great value-addedness to what formal education can provide. This interplay between the formal and informal learning will thus be able to provide a more holistic and well-rounded education for individuals, as highlighted in Nathan's case study.

12.4.1 Recommendations to Classroom Learning

Based on these findings on informal learning, we would like to propose some recommendations on improving classroom learning. Taking a top-down approach, we recommend the school leadership to be intentional in creating informal learning environments within the school and classrooms. This could be physical spaces within the school or perhaps time set aside during lessons where students are afforded the freedom to play and experiment topics of interest to them. Together with the teachers, this can create a culture of learning through play in the school and within the classrooms. Teachers would play a significant role in modelling to students that experimentation and play are encouraged, instead of simply focusing on grades and preparing for high-stake examinations.

Subject teachers can also communicate and collaborate with one another to facilitate interdisciplinary learning as well. For instance, a physics teacher can collaborate with a physical education teacher to design an activity or lesson that combines soccer with physics theory on speed, angles and velocity of shooting a ball. Episodes like these would be able to integrate learning a theoretical concept together with play and may cultivate a deeper interest to both soccer and physics.

12.4.2 Contributions to Existing Literature

The 5Cs framework's contribution to interest-based learning research is its support and extension of the four-phase model of interest development (Hidi & Renninger, 2006) by exploring the specific dimensions which facilitate the sustaining of interest in individuals. This framework applies to all four phases of interest development, because regardless of the stage of interest development, it is critical for

individuals to have self-generated interest or environmental support to facilitate continued engagement in the activity, lest their interests diminish or fade away completely (Renninger & Hidi, 2016). The dimensions presented in the proposed framework are therefore relevant as it provides a basis on what particular aspects of a child's environment parents or teachers can focus on in order to sustain and develop their interest in specific content or activities.

Based on the existing literature, the potential for interest is within an individual, but the specific content and environment delineate its direction and contribute to its development (Hidi & Renninger, 2006). The 5Cs framework thus provides a sociocultural lens where we can view interest development, attempting to narrow this gap in the literature while, at the same time, complementing the psychological aspect of interest sufficiently expounded presently.

This is still a preliminary study, and further research and data are needed to substantiate the 5Cs framework of interest sustaining.

12.5 Conclusion

This chapter attempts to illuminate the importance of studying interest from both a psychological perspective and a sociocultural perspective. Using the case study of Nathan, we describe the importance of sociocultural factors in the sustaining of interest using the 5Cs framework consisting of community, culture, confidence, conflict resolution and the recreating process.

Findings from the case study highlight the importance of external environmental support in interest development, and the vital role educators play in helping students develop their interests (Hidi & Renninger, 2006). The sociocultural lens of the 5Cs framework afford us a schema of the specific support required to cultivate interest development and sustainability as seen from the case study above. This case study illustrates the importance of teacher support for engagement in an object of interest, echoing the findings from Eccles et al. (1993), but goes one step further to highlight the importance of a positive culture that supports the interest across the boundaries of school, community and home.

Interest development cannot be devoid of its interaction with the sociocultural environment and the support structures it provides, beginning from the early phases of its development to the later stages of maintaining continued engagement. The psychological lens afforded by the four-phase model of interest will thus enable us to study interest from the individual level and to trace how an interest will develop over time. The 5Cs framework provides a more macroview of interest development by showing how much the sociocultural environment is able to affect interest sustainability. Our framework would therefore provide a preliminary attempt at unifying the psychological and sociocultural aspects of interest development in hope of providing a more comprehensive perspective of how interest can be sustained, benefiting both practitioners and researchers in the process.

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