

The Learning Styles of the Special Needs Children Using Pictures and Storyboard Writing: A Case Study

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ABSTRACT

This study explores the learning styles of three special needs children at Lynncroft Primary School, Nottingham. A one year study with a group of 12 children with different abilities and needs was carried out with the help of 3 teacher assistants. One of the researchers who was also the teacher in the classroom carried out the normal teaching and learning with the children by using pictures and ICT in the classroom. The pictures involved were taken by the children. The use of digital camera was introduced for the purpose of this study. After the pictures were taken and downloaded in the computer, the children would try to arrange the pictures accordingly to make a storyline. The children would, then, type their story in the computer. Activities were differentiated for all the children in the classroom. The three children were picked based on their abilities and special needs. This study has given a big contribution towards the school especially for the future special needs teacher.

Keywords: *learning styles, pictures and storyboard writing, special needs children*

Introduction

UNESCO published the results of a world-wide survey in 1996 about the laws relating to special educational needs in 52 countries. The report by UNESCO (1996) is a useful indicator of how a range of countries have approached this area of education. This summary focuses on the integration aspects of the report.

The main definition of integration of pupils with disabilities and/or learning difficulties in mainstream schools identified by the survey is

given as 'mandatory pedagogic integration or school-based integration'. This type of integration, as specified in law, relates directly to 'teaching and learning' in schools. Legislation in 27 countries (52%) provided for this type of integration (either wholly or partially). 'Above all, integration in this sense involves dealing with the individual needs of each child, subject to the capacity of a mainstream school to meet those needs' (UNESCO, 1996).

UNESCO's analysis of the many different laws found a recurring alternative to the notion of 'special needs' in the expression 'exceptional needs'. However, because special needs are 'exceptional' they are not 'ordinary'. The issue, therefore, is whether all children (with and without exceptional needs) should, in principle, be educated in an 'ordinary' school, thereby, integrating the learning experience of exceptional children into a mainstream framework.

Bearing the report by UNESCO (1996) in mind, this paper attempts to include the special needs children in the world of learning through technology by referring to the research questions as below:

- i. Do the special needs children collaborate with their peers when learning is taking place?
- ii. What are the predominant learning styles for the three special needs students?
- iii. Does technology play an important role in learning for the special needs students?

Collaborative Learning

According to Johnson and Johnson (1986), the concept of collaborative learning is the grouping and pairing of students at various performance levels for the purpose of achieving an academic goal, i.e. the students are responsible for one another's learning as well as their own. Therefore, the success of one student helps other students to be successful. The proponents of collaborative learning claim that the active exchange of ideas within small groups not only increases interest among the participants but also promotes critical thinking (Johnson & Johnson, 1986). Furthermore, they reiterate that there is persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than students who work quietly as individuals. The shared learning gives students an opportunity to be engaged in discussion,

take responsibility for their own learning, and, thus, become critical thinkers (Totten, Sills, Digby & Russ, 1991). Many of the studies on collaborative learning have been done at the primary and secondary levels. Hence, there is little empirical evidence on its effectiveness at the college level.

Cooper (2002) pointed out that the role of the teacher is also important in collaborative learning as s/he plays a number of vital roles in the successful implementation of peer learning: as developer of an educational program, as model of an expert learner, as coordinator of activities, as Socratic interlocutor and mentor, and as evaluator. This study utilised the teacher and researcher in a specific way, which reflected the roles above, but only insofar as:

- the program was outlined initially but not in specific detail by the teacher/researcher
- the teacher or researcher only acted as models or coordinators in a more limited way and directly at the request of the participants
- the roles of socratic interlocutor and evaluator were used at all times to help the participants move forward more independently towards full joint production.

Cooper (2002) further noted that in joint production, students have the opportunity to observe and internalise the processes modeled by their peers. The real aim of such a process is that the individuals will appropriate the shared processes to themselves and will be able to continue the collaboration even in the absence of their partners.

The essence of collaboration, therefore, is the construction of shared meanings for conversations, concepts, and experiences (Roschelle, 1992) and to create greater autonomy in the longer term. This may occur if motivation is enhanced. Chan and Baskin (1988) indicated a motivational role of collaborative work in that the feedback of peers in the negotiation of the final product helps students gain a sense of authority over their own writing, which in turn, leading to a greater motivation to write. Thus, the collaboratively produced outcome of the project, the storyboard, should represent a greater achievement than either of the participant pairs could have achieved alone.

In addition, the nature of the tasks is extremely important. Other research on peer learning by Wiener (2004) has shown that the interaction between and among the learners in a group influences the cognitive activity that is occurring, and it is this cognitive activity that accounts for high-level complex learning to take place; the thinking and interaction within the group must also be of a high cognitive level, characterised by

the exchange of ideas, information, perspectives, attitudes, and opinions (Wiener, 2004).

This study was designed to take into account the theories reviewed above. As a result, the design included open-ended collaborative writing with a great deal of choice about subject matter and the style of the materials to be produced. The use of pairs rather than groups seemed sensible as groups do not often feature in the normal curriculum and this reflected the issues raised about the culture of shyness. The task was designed to be sufficiently open-ended to allow discussion but to be manageable by a pair of collaborators in terms of the negotiation and need for some compromise to meet the time frame of the project. Besides, the study sought to increase confidence through collaboration and investigated how far a growth in confidence would allow coping with a growth in cognitive demand.

Learning Styles

Interest in the differences between learning styles began in the 1970s, when work in psychology on 'individual differences' brought about new perceptions of the nature of those differences (Willing, 1988, p. 39). Second language researchers appear to have been more than usually interested in individual differences and this has led to an increase of interest in this field of research, i.e., in applied linguistics for the last thirty years.

The term 'learning style' refers to a person's general approach to learning and problem-solving (Reid, 1996). According to Reid (1998), learning styles can be defined as the internally-based characteristics or styles often perceived or consciously used by learners for the intake and comprehension of new information. She further explains that students retain these preferred learning styles despite the teaching styles and classroom atmospheres they encounter, although the students may or may not acquire additional styles. Ehrman (1996, p. 54) refers learning style as

A learning style can run the range from a mild preference ('I'd rather learn by discovering patterns by myself') through a strong need ('It interferes with my learning when I haven't mastered the grammar patterns first – I have trouble following the material that uses them') to an out- and- out rigidity ('I have to see it before I can remember it; if I don't see it nothing sticks at all').

Guild (1994) claims that a broad understanding of learning environments and learning styles will enable students to take control of their learning and to maximise their potential for learning. Guild (1994) further explains that a teacher who truly understands culture and learning styles, and who believes that all students can learn, will offer opportunities for success to all students. Therefore, the result will be educated students who are able to participate fully in society, both freely and responsibly.

Research suggests that most people have only six to fourteen strongly preferred learning styles, though at least twenty-one have been categorised. Moreover, the learning styles are influenced by factors such as subject matter, context, age, prior knowledge, gender, motivation, and ethnicity (Reid, 1987).

Kolb's Experiential Learning Theory or the Kolb Learning Style Inventory (LSI) (Kolb, 1984) as cited in Smith and Kolb (1986, p. 14), identifies four basic learning styles; i) the divergent learning style (which includes those who are interested in people, tend to be imaginative and emotional and have broad cultural interests, generate ideas and lastly tend to specialise in arts), ii) the assimilative learning style (which are those who are less concerned with people and more concerned with abstract concepts but less with practical uses of theories and use inductive reasoning and the assimilation of disparate observations into integrated explanation), iii) the basic learning style (those who are organised and able to focus on specific problems through hypothetical-deductive reasoning, are relatively unemotional and also prefer to deal with people than things and who do best in situations such as conventional intelligence tests,) and iv) the accommodative learning style (who are risk takers, who adapt well to new situations, solve problems in an intuitive manner relying on people for information and most importantly are at ease with people). Students may self-report their learning style(s) using this inventory (Harthill & Busch, 1998, p. 108). LSI only measures a preference towards one or more learning styles, therefore, it is not intended to stereotype a student as one rigid unalterable learning type (Harthill & Busch, 1998). A number of students use a wide variety of learning tactics, and may change their learning orientation over the course of time as they grew older and mature and at the same time broaden their experiences.

Brown (1987) divides psychological differences or variations in learning a second language into two main categories; the cognitive variations and the affective variations. This paper concentrates on the cognitive variations in the review of literature, as other variations are not within the scope of the study.

Cognitive style and learning style have often been used synonymously but they are not the same. Keefe (1987, p. 6) claims that learning style is the broader term and includes cognitive along with affective and physiological styles. Keefe (1987) defines learning style as characteristic cognitive, affective, and psychological behaviours that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment' (Keefe, 1987, p. 5).

Keefe (1987, p. 9) describes the affective components of learning styles as encompassing aspects of personality that have to do with attention, emotion, and valuing, which cannot be observed directly but have to be inferred from the learner's interaction with the environment. Keefe (1987, p. 13) perceives physiological components of learning style, as 'biologically-based modes of response that are founded on accustomed reaction to the physical environment, sex-related differences, and personal nutrition and health'.

Cognitive style is defined by Kagan, Moss and Siegel (1963, p. 76) as 'stable individual preferences in modes of perceptual organization and conceptual categorisation of the external environment'. Another definition is by Messick (1976, p. 5), where 'they (cognitive styles) are conceptualised as stable attitudes, preferences or habitual strategies, determining a person's typical modes of perceiving, thinking and problem solving'. According to Tyacke (1998, p. 34) the above definitions stress not only the individuality but also the stability of learning behaviours. Tyacke (1998) claims that both research and teacher-experience indicate that style differences cause learners to react to the language-learning context in significantly different ways. For the purpose of this study, language teachers must make allowances for such differences.

Reid (1984) proposed three dimensions of learning style categories for ESL/EFL learning:

- i. *Cognitive Learning Styles*: Field-Independent/Dependent Learning Styles (FI/D); Analytic/Global Learning Styles; Reflective/Impulsive Learning Styles.
- ii. *Sensory Styles*: Perceptual Learning Styles (Auditory Learners, Visual Learners, Tactile Learners, Kinesthetic Learners and Haptic Learners); Environmental Learning Styles (Physical Learners, Sociological Learners).
- iii. *Personality Learning Styles (Affective/Temperament Styles)*: Extroversion/Introversion, Sensing/Perception, Thinking/Feeling,

Judging/Perceiving, Tolerant Learners/Intolerant Learners, Right and Left-Hemisphere Learners.

The Study

The study involves 3 subjects who were selected at random from Lynncroft Primary School, Nottingham, United Kingdom. The 3 subjects were autistic and dyslexic children aged 7 to 11 years old. The three were asked to choose their own partners from the classroom. They were to discuss and collaborate with their peers and at the same time use the pictures provided. The materials were chosen by the subjects from the websites. The Perceptual Learning Style Preference Questionnaire (Reid, 1987) was adapted and distributed to the subjects in order to find out their learning styles throughout the year. Reid (1987) developed and normed the PLSP survey in 1984 which consists of thirty questions.

Findings

The data reveal the perceptual learning style preference of learners in learning English for the 3 subjects based on Reid's (1987) Perceptual Learning Style Preference (PLSP). The rationale behind using the PLSP was to gain an impression of whether the subjects showed any evidence of clustering around certain preferences, and to compare the learning styles of the 3 subjects. Therefore, the results are presented in a form in which such comparisons can be made.

The Perceptual Learning Style Preference of the 3 subjects

In this section, the learning style preferences for the 3 subjects who participated in the study were considered. The 3 subjects were Ryan, Kyle and Harry. The points in the tables were identified as below:

- 38+** = Major preference
- 25-37** = Minor preference
- 24-** = Negligible preference

Therefore, the higher the score, the higher is the preference for that particular style.

Table 1: The Perceptual Learning Style Preference of the 3 Subjects

Subjects	Visual	Tactile	Auditory	Group	Kinaesthetic	Individual
Ryan	32	40	36	40	40	28
Kyle	32	40	32	40	40	28
Harry	32	40	36	40	40	28

Table 1 shows the learning preference for the 3 subjects who were involved with the storyboard writing. It can be seen that they are well-balanced with three major and three minor preferences. Nevertheless, all 3 had major preferences for tactile, kinaesthetic and group styles, which suggests their willingness to work on a project which involved the use of a computer and the help of a partner. If we consider individual items from the questionnaire as a composite of the group of 3, the following strength of preference could be found.

Table 2: Visual Learning Style Preference for the 3 Subjects

Visual Learning Style Preference	Mean	STD	Major	Minor	Neg
■ I learn better by reading than by listening to someone.	3.00	1.095	0	3	0
■ I learn more by reading textbooks than by listening to a lecture	3.00	1.095			
■ I learn better by reading what the teacher writes on the chalkboard.	2.50	1.225			
■ When I read instructions, I remember them better.	2.33	1.366			
■ I understand better when I read instructions.	2.00	1.095			

Table 3: Auditory Learning Style for 3 Subjects

Visual Learning Style Preference	Mean	STD	Major	Minor	Neg
■ When the teacher tells me the instructions, I understand better.	2.83	1.472	0	3	0
■ I remember things I have heard in class better than things I have read.	2.83	1.472			
■ I learn better in class when the teacher gives a lecture.	2.83	.983			
■ When someone tells me how to do something in class, I learn it better.	2.33	1.033			
■ I learn better in class when I listen to someone.	2.33	1.033			

A clear message here from Tables 2 and 3 is that teachers' instructions are vital (the highest mean score in the two tables; 3.00), even though reading seems to be an important back-up. The balance of auditory and visual learning styles would make pair work in creating written material a manageable and perhaps positive experience.

Table 4: Kinaesthetic Learning Style for 3 Subjects

Kinaesthetic Learning Style Preference	Mean	STD	Major	Minor	Neg
■ I learn best in class when I can participate in related activities.	4.33	.516	3	0	0
■ I understand things better in class when I participate in role-playing.	4.00	.000			
■ I enjoy earning in class by doing experiments.	4.00	.000			
■ I prefer to learn by doing something in class.	3.83	1.472			
■ When I do things in class, I learn better.	3.83	1.506			

Table 4 shows that the mean scores for all the items are relatively high with three above all. Taken together with the tactile preferences in Table 5 it can be seen that active learning using materials, such as computers, should be a strong motivator.

Table 5: Tactile Learning Style for 3 Subjects

Tactile Learning Style Preference	Mean	STD	Major	Minor	Neg
■ I enjoy making something for a class project.	4.50	.548	3	0	0
■ I learn more when I can make a model of something.	4.00	.000			
■ I learn more when I make something for a class project.	4.00	.000			
■ When I build something, I remember what I have learned better.	4.00	.000			
■ I learn better when I make drawings as I study.	3.00	.894			

Table 5 above shows that all the 3 subjects selected a tactile learning style as a major learning style preference. The hands-on styles of learning specifically referred to in these statements are clearly not part of their usual English learning experience and is, therefore, a notable expression of desired change. While design / building were not part of the programme, the attention to visual impact of the storyboard materials had more of this element than the students were accustomed to in normal English learning contexts.

Table 6: Group Learning Style for 3 Subjects

Group Learning Style Preference	Mean	STD	Major	Minor	Neg
■ I prefer to study with others.	4.33	.516	3	0	0
■ I enjoy working on an assignment with two classmates.	4.00	.000			
■ In class, I learn best when I work with others.	4.09	1.06			
■ I learn more when I study with a group.	4.11	1.14			
■ I get more work done when I work with others.	4.02	1.18			

Table 6 explains that all the 3 subjects prefer the group learning style as a major learning style preference. Involvement of peers in a group was preferable in this study. The mean scores were all high for this learning style.

Table 7: Individual Learning Style for 3 Subjects

Individual Learning Style Preference	Mean	STD	Major	Minor	Neg
■ When I work alone, I learn better.	2.50	.837	0	3	0
■ In class, I work better when I work alone.	2.17	.983			
■ I prefer to work by myself.	2.00	.000			
■ I prefer working on projects by myself.	1.83	.408			
■ When I study alone, I remember things better.	1.17	.408			

Table 7 demonstrates that individual learning is not regarded positively. Even though 3 subjects still have this as a minor learning style preference, the scores are lower than other learning styles. Additionally, this table contains the two lowest mean scores in the entire survey.

Discussion

The results above illustrate that the 3 subjects are open to working on collaborative hands-on projects (100%). This result was similar to Reid's research (Reid, 1996) with 1300 students where her subjects prefer the tactile learning style preference (100%). Of the ten most popular items the only one not concerned with tactile/kinesthetic/collaborative working was the statement concerning the teacher giving instructions. Although this is an item suggesting auditory learning style preference, it could be construed as a need for support rather than independence. In fact, out of 10 statements which ranked as the highest mean scores, 5 concerned working with others. The statements: *'I enjoy working on an assignment with two or three classmates'*, *'I learn more when I work with others'*, *'In class, I learn best when I work with others'*, *'I get more work done when I work with others'* and *'I prefer to study*

with others' all suggest they would like more of a mode of working that they do not experience so often.

The results further suggest that 5 out of 10 statements from the lowest mean scores were related to the least popular style, the individual learning style preference. It is also important to recognise that subjects did not prefer to work alone. This could possibly be due to lack of confidence to work alone and lack of confidence to speak in English in front of the class. The result was similar to Reid's findings (Reid, 1996), where none of her subjects had major preference for the Individual Learning Style.

Discussion of the Preferences

The data show that some preferences were similar to that of Reid's (1998) and some were not. Reid, in her study, showed that 1300 students in the United States had major preferences for kinaesthetic and tactile learning styles. Similarly, the subjects from this study preferred the tactile learning style. To add, this research also revealed the subjects' preference towards group learning style.

However, the pattern of Reid's study differs in terms of the number of students involved. Her subjects consist of 1300 students from various ethnic groups like, Arabic, Spanish, Japanese, Malay, Chinese, Korean, Thai, Indonesian and English. Reid's findings were that

Students studying English as a foreign language (EFL) – that is, studying English in their native countries – who plan to attend school in the United States – might benefit from learning about learning styles and from training in 'flexing' or extending their learning styles in order to be more prepared for U.S classroom
(Reid, 1998, p. 18)

Reid's descriptions of her subjects were explained briefly here. She claims that some of the students even have multiple learning styles; this may either be a cause or a result of them being successful university students.

Pedagogical Implications

The findings suggest that the learning style preferences of the cohort had a coherence and that the favoured modes of working do not reflect

the usual diet in the current modules. The desire to work collaboratively has a strong application to language learning and the storyboard process is a beginning of a means to address the need for tactile experience too. Certainly it can be said that in designing a new syllabus for any courses it is necessary to ensure that different learning styles of the subjects are taken into consideration by including multi-skill activities that involve a range of task types. This is particularly essential for the special needs in the teaching and learning process since they need a greater variety of activities to improve their learning skills.

Conclusion

The findings of the study have established the differences in learning styles between the learners. These findings suggested that in designing the special needs syllabus, it is necessary to assure that these learning styles be taken into consideration. As Kinsella (1995) stated, it is necessary to teach to the students' learning styles and also to 'help the students stretch by their capabilities to learn through alternative styles'. The existing syllabus would seem to be more appropriate to auditory /visual / individual learners whereas the subjects here are tactile/kinaesthetic and collaborative learners through preference.

It is hoped that this study has made an original contribution to knowledge about the area of language for the special needs. Despite the limitations above, the findings of this study show evidence of potential gains for the special needs students in learning. It is also possible that the implications described would be appropriate to other learners both at primary and secondary schools. The study is of a particular significance for the following reasons:

- It has investigated an adverse important area in primary school for the special needs children utilising different instruments at a specific cohort into learning.
- It reveals a possible rationale for revision for educators in schools to consider syllabus design in primary schools for the special needs.
- It provides an exemplar of potential future developments in instructional design with a view to motivating students in learning.

This study has provided useful data to support other studies reported in the literature that explored learning. While more research always remains to be done, it is hoped that the results reported here offer an

original contribution in the area of teaching and learning and in the area of instructional design.

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