

Investigating the Difference in recall between Video/Audio learning and Read/Write learning:

Final Year Project

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Abstract

Theoretical research has stated that the knowledge of learning styles reduces one's frustration and increases success (Van Blekorm, 2013). This study investigated whether video/audio participants (N= 64) would recall more information than read/write participants (N= 55). The study also investigated the differences in recall between MCQ's and comprehension questions in both video/audio and read/write groups. Finally, the study investigated the relationship between visual/auditory learning styles and the video/audio group. 119 students took part in this study. The study had an experimental design between two groups, which observed descriptive statistics with frequencies, T-tests, and correlation statistics. The results supported the first and the second hypothesis, finding a significant difference in recall between two conditions. However, the third hypothesis was rejected, showing a negative relationship between video/audio and the learning styles. Limitations and strengths were taken into consideration for future research. Overall, the results indicated noteworthy findings and that further research was to be made towards learning styles for future reference. Implications of the study were also supported and applications were suggested for use in various education levels.

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Introduction

1.1 Introduction

One of the most important tools in the human mind is the ability to learn. Learning allows for reflection and trains the mind to adopt skills that are necessary for various situations that life would present. Learning, according to Uljens (2005), is known to be how an individual's behaviour changes in terms of their ability to adapt, recalling what they experience and understanding something in their natural context. In saying that, this study aimed to focus on how individuals learn in terms of the information that they are able to recall through academic videos and text. In terms of memory, "recall" is the ability to retrieve information that one has had an encounter with (Radvansky, 2015). Current studies have found a positive relationship between individual's working memory and recall strategies in long-term memory (Unsworth, 2016). The study also found that this was due to effective use of strategy. Such was important specifically for this study in a sense that it gave knowledge on how recall requires strategy in order to retain information within the long-term memory.

The implication of the current study is that there has to be more than one way to learn. The study also implies that Video/Audio learning has to be taken into account as a dominant way for individuals to recall information. In order to support this theory, research was taken to investigate findings and theories within each learning style.

Read/Write Learning

Anker (2009) suggested that read/write learners are able to take in information simply by either reading what they write or writing what they read. This would mean that these type of learners are most likely to read text books and possibly summarise information that they get from it in order to store information for future recall in the best way they know how (e.g. mind maps, bullet points, or essays with concise paragraphs). Reading and writing is considered to be a dominant way in which students learn as it is the learning method that is taught in the education system (Anker, 2009, Allen et al, 2010). In the past, research has found a higher achievement in learning through read/write based on the fact that the school promoted a read and write focus along with a positive environment that motivated the students (Pressley et al, 2007). In saying that researchers also found that at times this would require great efforts to maintain this high achievement. This could require maintenance strategies such as repetitive reading or writing.

Video Learning

Given the rise of technology in the urban world, it is without doubt that visual learning has certainly evolved over the past few years. This is quite evident in schools that now use computers and tablets instead of books and virtual screens instead of white boards. Everything has become much more visual and arguably easy to learn. However, visual learning is not a new phenomenon but has been underrated or less applied method for learning. Gangwer (2009) observed this and commented that people have been living in a visual society dating back to the times people used cave paintings and Egyptian hieroglyphics before words were known as a means of communication and learning. Visual learning is the ability to perceive objects or graphics and being able to use them as a learning strategy. Fetter (2012) went further into the study of visual thinkers and managed to tie a deeper connection of physically seeing something to enhance learning through re-drawing an image her son had visually seen in school. Moreover, the advanced form of visual learning that was focused on in this study was the phenomenon known as “video learning”.

Learning through videos has proven to be quite effective in teaching skills that support learning for children with autism (MacDonald, Dickson, Martineau, Ahearn, 2015). The study aimed “to evaluate the relationship between tasks that require delayed discriminations such as delayed imitation and delayed matching to sample on acquisition of skills using video modelling” (P. 33). MacDonald et al found a positive correlation between both of the tasks and learning through video modelling, to the point that gave cause for them to consider suggesting to educators as to what type of impact video modelling to make as a teaching method to specific children. Research has also found that perhaps there’s a lot to learn even from educational television shows. One of these common shows for children was “Sesame Street” (1969). According to Weaver (2013), Sesame Street is more than just a television show that children can learn from. She further stated that neuroscientists (Canton & Li 2013) have done past studies using “functional magnetic resonance imaging” (fMRI) in which they found that Sesame Street was successful in predicting children’s performance on verbal IQ tests and maths that appeared to have had adult-like brain responses. In the new study, neuroscientists found that perhaps the children’s adult-like brain responses during their video sessions could predict their real-world performance (Weaver, 2013). Though that might appear to be a bold proclamation, it has been previously found that viewing Sesame Street was positively effective towards the development of pre-schoolers, which resulted in the encouragement of video usage as a feasible option (Rice et al, 1990).

Audio Learning

Audio learners are said to acquire knowledge through listening and speaking (Scott, Lundgren & Thompson, 2011). Scott et al believed that this type of learning included important factors all the way down to the pitch of words that are taken in during the listening process. Furthermore they emphasized on how audio learners benefit from such that they don't need any written format to recall information. This would suggest that they have a higher advantage in situations where they are among a group or during an aural examination. Such would be beneficial for them since audio learning is encouraged in Ireland for those who decided to pick up a 2nd or 3rd European language in school.

In an article investigating the effects of tutoring through "audio prompting" on the acquisition of vocabulary between peers, it was found that struggling readers made decent gains from incidental learning through audio and even stronger improvements through audio prompting (Mackiewicz, Wood, Cooke & Mazzotti, 2010). Audio-recordings have also been previously used to investigate whether they encourage student engagement and supplementary learning (Bickerdike, Whittle &, Pickering, 2014). The results recorded that 70% of students preferred the audio way of learning while 68.7 % of students requested that such a resource should be extended to other modules. Again this is consistent with other findings above that encourage more use of technology in education. Also, it has been found that audio- assisted text has proven to give high learning outcomes than just text (Webb& Chang, 2014).

To summarise 3 of the learning styles, research has been previously taken to prove that teenage learners have found that video learning is far more effective than learning with just pictures more so to the point that they focus their efforts on it much more (Lin& Tseng, 2012). Research has also shown that students have found a positive link between auditory learning and progression in their course and also how mature students responded well to the idea of audio learning (Mercer, Pianosi, 2012). Finally research has also stated that read/write performance can be achieved but takes an amount of effort to maintain the performance (Pressley et al, 2007). However, little research was found in terms of which learning type was more dominant between video/audio and read/write. This report theorised on the fact that a link between visual and auditory learning was a good indicator that a more visual society is needed in aiding better learning.

1.2 Early Theoretical Approaches to Learning

Learning is without a doubt a very broad topic that can be explained through many approaches. Behaviourists explain the change in one's behaviour through what is known as conditioning (Pritchard, 2013). Conditioning is generally either known as classical or operant.

In classical conditioning, one's behaviour is changed through a response to a stimulus (Pritchard, 2013). Pritchard explained this using the work of Pavlov (1927), who managed to condition dogs to salivate just by hearing the sound of a bell. At first Pavlov would sound a bell at the dogs, through which he initially found no response. Later he observed that dogs would normally salivate at the presence of food. It was through this observation that Pavlov would later sound the bell, along with the food, causing the dogs to salivate. After some time, the conditioning process went so well that dogs would salivate at sound of the bell even without the presence of food, thus shaping their behaviour. Without getting too deep into the theory it was seen that individuals, as well as animals, would most likely be conditioned in a similar manner (Pritchard, 2013). For example, presenting a doll followed by a scary sound could easily condition a child to be scared of any doll even after the sound is taken away.

Operant conditioning is considered to be an important way to learn in that it presents a reinforced behaviour with a reward (Pritchard, 2013). Skinner (1904-90), according to Pritchard, was well known for using this type of behaviour. Skinner was successful in creating what is now known as the "skinner box" which was sort of an obstacle course where an animal would have to learn to press a lever in order to get some food. Food in this sense would act as a reward. Such is evident even on an academic point of view. In order to obtain the reward of exceptional school grades, one has to learn the requirements and information to do so. A high grade will most likely show that one's competence has been on a basis of how well they have been participating in school and how much they have been learning leading up to the test.

A theoretical point rose while researching this type of conditioning. It was quite interesting to see how the presentation of food and the bell contributed to one's learning. This is to say that both sound and the visual factors along with repetition were key in causing one to behave a certain way if confronted by a certain situation, learning something they may never forget. Both views of conditioning demonstrated how one can take in such knowledge even to their long-term memory without it having to be accomplished through a massive intake of just words. Finally it would also question just how much one could learn environmentally as well as in academic settings.

Cognitive theorists like Tolman (1941) were against the behaviourist approach to learning as they thought that behaviour was “goal-oriented and had both direction and purpose” which needed the desire and motivation to actually want to learn as opposed to being exposed to unfavourable circumstances as reinforcement (Sabharwal, 2009, P. 42). From what is known according to Barret (2004), prior knowledge and experience allows the process of learning to draw new information and create a personal meaning from it (as cited in Stein& Farmer, 2004). In other words, learning doesn't mean just being able to recall information that is stored in one's memory as much as it is being able to gather previous information to create new knowledge constructs. Thus it can be said that it is something that can constantly evolve, depending on what is continually being learned. Also in the same text it was noted that successful learning involves people knowing their goal, a correct presentation of one's learning style and correct student support.

Tolman & Hozvik's Blocked path study (1930) argued that learning didn't require reinforcement or a change in behaviour. In the study he proposed a ten-day observation as he placed 3 groups of rats to run in a maze until the end. The first group of rats were reinforced every time they completed the maze while the second group were not. The third group only received reinforcement on the eleventh day of the study (as cited in Taylor& MacKenney, 2008). Tolman & Hozvik observed that not only did they prove their theory, but also noticed that the best reinforcement can do is improve the performance of the rats but does not influence learning itself (Taylor& MacKenney, 2008). Such can be applied to life nowadays where the apprehension of knowledge is all one needs for the sake of just knowing without seeking a reward attached to it. Furthermore, Tolman's theory that one's behaviour is goal-oriented can be applied in classrooms, where learning activities, correct teacher- student motivation and providing relevant materials can improve one's learning intake and achievement (Taylor& MacKenney, 2008).

Piaget (1952), according to Illeris (2009), viewed learning from a constructive perspective through which he distinguished between 4 types of learning that appear in different contexts one's life. The first of these was cumulative learning, which occurs early in life and then on a situational basis (Illeris, 2009). In other words, such learning occurs where an individual has to recall a pin number when they have to collect money from a bank or having to remember whether the door was locked before falling asleep. The next type of learning was known as “assimilative”. Shaffer (2009) defined assimilation as “a process by which children interpret new experiences by incorporating them into their new schemes” (P. 53). An example of this

could involve not being able to tell between two different types of dogs. Following assimilation was accommodative learning. This type involves being able to subcategorise an existing scheme to invite new information to what has been previously known. (Illeris, 2009) Again in the same situation mentioned above, a child would be able to differentiate between a Siberian husky and a German shepherd while acknowledging that both breeds are dogs.

Finally the last was “significant learning”, which Rogers (1994) declared as “learning which makes a difference” (Alro& Skovsmose, 2002, p. 133). By this he meant that this type of learning involves more than just being able to recall what has already been learned, but also being able to identify with the time through which knowledge changes continuously (Alro& Skovsmose, 2002). Moreover in the same page, Rogers encouraged that the challenge is manage being able to learn in environments that make it easy to adapt to new learning process. This could be found to be one of the most imperative things to have ever been stated because such is being observed even in this century. Drawing from previous theories, one can see that learning, although similarly defined, can be approached in so many different ways while still leaving room to be explained in many ways to come. In the past, recalling information has been explained behaviourally, cognitively and constructively. However, while theoretical, practical and physical examples have been used to try and explain how one learns effectively, there are now new ways which could arguably be deemed effective in approaching learning in this generation. One of this could be through the use of technology. Drawing from what Rogers said, it can be argued that while recalling information from a book or writing information down as a means of learning might have worked before, the use of technology in an environment that is already technology driven in the 1st world, might serve to be a significant contributor to one’s learning.

Learning with Technology

Following up on previous theories is the involvement of technology towards learning. The advancement of technology has increased so largely that it has become part of the learning tools even in education. Technology is perhaps a good way to bring environmental factors in learning through a virtual perspective. Research has even stated that learning technologies have become positive contributors in one’s self-regulation learning (Cleary, 2015). Dabbagh and Kitsantas (2013) found that students who used learning technologies as a self-regulating and motivation tool, have developed positive attitudes towards learning (as cited in Cleary, 2015).

Moreover, this study also found that electronic feedback from lecturers has made a positive impact on students' intrinsic motivation and curriculum engagement. The use of listening-self assessments and online reading along with videos and online tutorials as additional lecture tools were also encouraged (Cleary, 2015).

Technology has also been used to address students with learning disabilities (LD's) by using a technology system known as "strategic reader" (Hall, Cohen, Vue & Ganley, 2014). Strategic reader was used to measure both the online and offline effect on student progress. The study found strong significance between the online tool and student comprehension scores. Hall et al found that the difference in scores between online conditions and offline conditions was significantly large for students with LD's. Furthermore, it was found that strategic reader was highly preferred by students with LD's as they found that it was quite engaging and helpful, thus creating a promising path for technology to be significant contributors to one's learning in digital environments given that further research goes into it (Hall et al 2014). This is consistent with other researchers that aimed to integrate cognitive science and technology to investigate whether it improves learning in education (Butler, Marsh, Slavinsky & Baraniuk, 2014). In a classroom experiment, a new e-learning system (OpenStax Tutor) was used to put cognitive science principles into effect as an intervention compared to standard principles. The methodology itself was very detailed as it aimed to observe student learning progress through repeated practice, timed feedback, follow-up visitation of what was being learned and receiving required feedback on student progress. Butler et al found a significant increase of performance for students during exams despite the small changes made in contrast to standard principles. Also it was observed that cognitive principles could have been still effective without the use of technology but the researchers argued that technology is still advancing and has the potential to add effect to these principles and the growth of learning not only locally but worldwide. They stated that "technology can help us understand how best to implement these principles for individual learners while also producing new discoveries about how people learn" (Butler et al, 2014, p. 339). Again this supports the idea that with the correct research, there are more ways to learn with technological help. Although, some have discouraged the use of technology in educational settings, it cannot be ignored that the use of technology towards collaborative learning and self-directed learning contributed positively to learning and was deemed reliable and valid.

Learning Styles

According to Van Blekorm (2013), people are either visual, aural/auditory, read/write or kinaesthetic learners. Van Blekorm further emphasised on the importance of learning styles to reduce the possibility of frustration and increase greater success. The focus will be aimed more at Visual and Aural learning styles. The VARK learning style is a 16 item questionnaire that assess the four modalities mentioned above that an individual might belong to. The idea behind it is very interesting. According to Allen et al (2010) Fleming argued that the whole learning environment in classes appears to be more suitable for just the teacher and doesn't quite focus heavily on the students. He also stated that in a situation where a teacher might realise their own learning preference after taking the questionnaire, is likely that they may never change their teaching methods because the whole education system is heavily based on the read/write preference, which is really a quarter of what the VARK educates (Allen et al, 2010). The VARK questionnaire has been used in several studies including finding out the "learning preferences of caregivers of asthmatic children" (Dinakar, Adams, Brimer & Silva, 2005, P.683). The study found that the majority of individuals (58%) were multimodal learners, which means that they have more than one learning preference. Researchers found that such knowledge might serve to be beneficial for the caregivers and patients as they found that finding out the preferred learning style overall might give them the ability to create learning activities that will give the family a better understanding about asthma in the easiest way possible.

According to Karthigeyan& Nirmala (2013), the Perceptual Learning Style Preference Questionnaire (PLSPQ, Reid, 1984) is a 30- item self-assessment questionnaire that was designed specifically for students with foreign students to see how they could use their perceptions to learn at their highest potential. They proposed that students were either Visual, auditory, kinaesthetic/tactile, group or individual learners.

The PLSPQ has been previously used to investigate whether perceptual learning styles correlated with strategies in a learner's vocabulary (Zokae, Zaferanieh& Naseri, 2012). The results recorded a specific positive correlation between the individual's strategies in learning vocabulary and their perceptual learning, determining that visual, auditory and kinaesthetic learning were the most frequent learning styles in the study. Perceptual leaning styles (as stated by Abidin et al, 2011) have also been previously known to have a positive relationship with academic achievement and have also shown achievement patterns in not one but in all subjects.

Rationale

Research has stated the fact that certain individuals not only have one learning model but are actually considered to be “multimodal” (Flemming, 1987). However, little or no research has actually focused on which learning style is considered to be the most dominant. Multimodal learners could be comfortable knowing that they belong to more than one category but there is also a need to know just which learning style they can benefit from the most. Significant results in this case might bring about making suggestions in colleges on encouraging the use of equipment to aid a dominant learning style in order to help improve learning among students. Flemming also argued that that Read/Write learners appear to be the only ones who are supported by the way the education system is set up. However, given the argument above on the advancement of technology even in educational setting, it only makes sense to take even the research found in this study and apply it to individuals who are either visual/ kinaesthetic or even audio learners to enhance improvement in all learners. Audio is used in school but only for comprehension given that students might take up a 2nd or 3rd European language in school. Needless to say it is encouraged more than video learning. If the hypothesis is therefore true that video learning is more effective than audio learning then it would be highly recommended that the use of videos in education should be much more frequent and not occasionally only. Success in this study might also result to further studies including age groups and further learning styles being accounted for.

Hypotheses

1. There will be a difference between Video/Audio learning and Read/ Write learning scores in terms of recall. Specifically, the video/audio group will have higher recall scores than the read/write group.
2. There will be higher recall scores in the multiple choice questions (MCQ's) than the open-ended questions (comprehension) in both conditions.
3. There will be a difference in recall achievement between the two conditions depending on one's learning style. More specifically, individuals who score higher on the visual and auditory learning style are more likely to score higher on the video/audio aspect of learning.

Methods

Participants

A total number of 119 participants from the National college of Ireland and other universities in Ireland, voluntarily took part in the study. Initially the study had 121 participants in total but 3 of them had to be excluded because they were required to be currently in education. The overall study consisted of more females (N = 85, 71.4 %) than males (N = 34, 28.6 %). The age ranged from 18- 54 years within 105 participants, with the majority of students ranging from 18-22 years (N = 79, 75.2%). 14 participants did not disclose their age but were not excluded because it wasn't the main focus provided they were still in education. Participants were asked to disclose the course they were studying. A total of 20 students studied Psychology, 27 studied Business and Law, 20 studied Computing, 12 studied Science and 8 studied Medicine or Nursing. The majority of students studied various courses but could not be grouped together so they were labelled together as "other" (N= 32). The study itself was split into two conditions. The first was the Video/Audio condition which was completed by 64 (53.8%) students, while the second was the Read/Write condition which was completed by 55 (46.2%) students in total.

Measures/Materials

In order to take part in the study, participants needed to have access to the internet by using either their portable devices or a computer/laptop. Students also had to be familiar with Google Forms and needed to have access to either Facebook or their student email.

Google Forms was used as a platform to create a few questionnaires between two conditions. Each condition had 7 sections.

Section 1 contained an information sheet. This was given as a brief summary to inform the students as to what the study was about and the implications. Depending on the condition they picked, students were told that they would either be watching a video or reading a text before they could answer any questions. Participants were also informed that they would remain anonymous during the study to ensure confidentiality and that they could withdraw at any time if they wished to stop answering questions. Finally they were also informed with details containing the details of the supervisor or the researcher if they had any further queries (See Appendix 1)

Section 2 contained 6 demographic questions. Participants were required to give information concerning the age and gender and whether they were in full or part-time education. This was to ensure that only students from the age of 18 and above should take part in the study. Students were also asked to disclose the degree they were studying, what graduate level they were in and in what year they were currently in. (See Appendix 2)

Section 3 included either the video or the text (which was transcribed from the video). The video was approximately 7 minutes, which could have been the equivalent time that was needed to read the text. Students were required to watch the video or read the text very carefully in order to answer the questions in section 4 and 5. (See appendix 3)

Section 4 was an MCQ section. This involved 6 questions with possible answers that aimed to test how much the students could recall from the video/text (see appendix 4). **Section 5** was a comprehension section. This included fairly challenging questions that students had to answer on their own to assess how much they could recall towards the end of the video/ text (see appendix 5). **Section 6** was a general feedback questionnaire, where individuals had to give their opinion as to how easy they found the task overall, how easy they found it to recall new information and how interesting they found the study, using a 7 point Likert scale (See appendix 6)

Finally, **section 7** was a Perceptual Learning Style Preference Questionnaire (PLSPQ) by Reid (1984). Students were asked a total number of 30 questions which would determine what learning style would suit each individual (see Appendix 7). Upon completion, students would either be labelled as Visual, Auditory, Tactile, Group, Kinaesthetic or individual learners. In each statement, students had to self-report whether they strongly agreed (given a value of 1), agreed (2), were undecided (3), disagreed (4) or strongly disagreed (5).

Facebook is known to be a highly influential social network that ranges from “friend to friend” online communication to company advertisement (Levy, 2010). Because of its popularity and student familiarity, Facebook was used as a medium to send the questionnaire links to students within Ireland. These links were either sent to the group pages with many individuals within it, or through private messages. Finally, the links were also sent to student emails within the NCI.

Design

The quantitative study that was undertaken was a between-groups experimental design. Two separate questionnaires were created for the two groups. The questionnaires had the same questions but had different methods of portraying the relevant information to the students (i.e. one group received a questionnaire with a video comprehension, while the second questionnaire had a text comprehension that was taken from the video). The experimental design was undertaken to view the level of recall in one condition compared to the other. Therefore, participants were only allowed to choose one condition. Participants answered the online questionnaires using google forms. Responses were collected using Microsoft Excel and then analysed using a statistics data editor called SPSS (version 22).

There was no pilot study or a control group because of the nature of the study. Since recall was being measured, it was not imperative to have a control group because the conditions were so similar that if the control group took part in the study again it would manipulate the results of the second condition or cause bias.

Procedure

Prior to beginning the study, the Ethics Board of NCI granted ethical approval after they had carefully read the implications of the project. The educational video that was chosen was taken from YouTube and was then placed on google forms as a first condition (Video/Audio) questionnaire. The text based comprehension was then transcribed from the YouTube video and then placed on Google Forms as a second condition (Read/Write) questionnaire. 12 questions were then created according to the video/text. A small general feedback questionnaire was also designed, followed by a perceptual learning style questionnaire which was copied to Google Forms. Google Forms was then able to generate two separate links for the conditions that could be shared to the participants. The links were sent out for 2 weeks and were sent in rotation (Video/Audio condition would be placed first and Read/Write would be the second option in the first week, and vice versa the next week).

Participants that took part in the study were selected using a snowball and convenience sample. They were invited to take part in the study either from Facebook, WhatsApp or through their student emails. All participants were briefed in terms what the requirements of the study were. This was done through an information sheet that described few details of the study, contact numbers and assurance that the study was voluntary and anyone could withdraw from the study at any time. Students had to give their consent in order to take part in the study. In order to

ensure a random selection within the sample, students were only required to click one link to take part in the condition they first chose. All students were anonymous. They had to make sure to watch the video or read the text carefully before answering any question and were asked not to go back to the video/text after they had gone through it once. Questions were to be answered carefully and honestly throughout the study. In total, the study took approximately 10-15 minutes. Depending on how interesting they found the questionnaires, participants were also encouraged to voluntarily share the questionnaire with other students that they knew within Ireland. This was done as an aim to get a relative sample within the study. All data was collected within the 3rd week after sending the questionnaire. This ensured time to get a great number of responses. All data was collected, recoded and analysed using Microsoft Excel and SPSS. All variables were assessed carefully in order to see if they would support the hypothesis. In saying that, descriptive results were collected followed by inferential statistics. Frequencies were also recorded to view the total recall in both conditions.

Results

SPSS was used to analyse all of the data in order to view the descriptive statistics and inferential statistics. Descriptive results involved finding the average number of recall scores and total learning styles, how the scores deviated from the average and their possible ranges. Frequencies were also run to view a comparison of scores between the two conditions to see if they supported the first and second hypothesis. Inferential statistics involved independent samples T-tests and correlations between Recall scores and learning styles. Correlations were taken to view whether they supported the third hypothesis.

Descriptive Statistics

The first table explained descriptive statistics that focused on age, gender, total recall, comprehension and MCQ scores (see table 1 below). The mean (M) age of the participants was 22.62 (SD = 6.56), ranging from 18-54. Total recall had a mean score of 8.27 (SD = 2.93), ranging from 0-12. The mean score for comprehension was 3.71 (SD = 1.88), ranging from 0-6. MCQ scores also ranged from 0-6 with the mean score (M = 4.55, SD = 1.38). Ranges were also recorded respectively for each variable.

	Mean	Standard Deviation	Range	Possible Range
Age	22.62	6.56	36	18-54
Gender	1.71	.45	1	1-2
Total Recall	8.27	2.93	12	0-12
Comprehension	3.71	1.88	6	0-6
MCQ	4.55	1.38	6	0-6

Table1: *Descriptive statistics for demographics and total scores*

Descriptive statistics were also carried for the learning styles, looking specifically visual& auditory learning styles. The mean score for visual learning was 16.05 (SD = 5.03), while

auditory learning styles had a mean score of 13.72 (SD = 4.19). Visual learning was the second highest response rate on average, making group learning the highest (M = 17.24, SD = 6.70). All learning styles ranged from 6-30.

	Mean	Standard Deviation (SD)	Range	Possible Range
Visual Learning	16.05	5.03	24	6-30
Auditory Learning	13.72	4.19	24	6-30
Tactile Learning	14.11	5.24	24	6-30
Group Learning	17.24	6.70	24	6-30
Kinaesthetic Learning	12.50	4.70	24	6-30
Individual Learning	13.85	5.954	24	6-30

Table 2: *Descriptive statistics for perceptual learning styles*

Descriptive results also ran frequencies to determine levels of successful recall between the video/audio condition and the read/write condition. This was done to investigate how well participants were able to recall what they learnt between the MCQ and the comprehension questions (see table 3 and 4). The first hypothesis had proposed that Video/audio participants would score higher than read/write participants in terms of recall. The findings explained that the video/audio group showed higher levels of recall than the read/write group in both the MCQ and the comprehension question. Total recall scores were then added together and showed greater levels of correct answers in Video/audio conditions (M =76.7%), compared to levels of correct answers in read/write conditions (M =59.85%).

	Video/Audio (%)	Read/Write (%)
Question 1	89.1%	67.3%
Question 2	70.3%	30.9%
Question 3	93.8%	83.6%
Question 4	56.3%	65.5%
Question 5	81.3%	85.5%
Question 6	92.2%	90.9%
Mean	80.5%	70.6%

Table 3: *Frequency percentages for both groups who answered all MCQ's correctly*

	Video/Audio (%)	Read/Write (%)
Question 7	67.2%	54.5%
Question 8	84.4%	50.9%
Question 9	53.1%	34.5%
Question 10	70.3%	27.3%
Question 11	82.8%	58.2%
Question 12	79.7%	69.1%
Mean	72.9%	49.1%
Total Mean (Question 1-12)	76.7%	59.85

Table 4: *Frequency percentages for both groups who answered all comprehension questions correctly*

General Feedback

A general feedback frequency was also devised to show how many participants found the study interesting, how many found the task easy overall and how many found it easy to learn new

information. In the video/audio group 54/64 participants found the group either interesting, somewhat interesting fairly interesting or very interesting while the read/write group recorded about 46/55 who reported the same. 43/64 Participants in the video/audio group found the task overall to be either very easy, fairly easy or somewhat easy while 21/55 participants in the read/write group reported the same. Finally, 37/64 participants found it either very easy, fairly easy or somewhat easy to recall new information while 18/55 participants in the read/write group reported the same.

Inferential Statistics

Independent Samples T-Test

An independent samples t-test was conducted to compare the total score of recall between video/audio and read/write participants. There was a significant difference in scores between the two groups of participants, $t(117) = 3.99$, $p = .00$, two-tailed with video/audio participants ($M = 9.20$, $SD = 2.67$) scoring higher than read/write participants ($M = 7.18$, $SD = 2.86$). The magnitude of the differences in the means (mean difference = 2.02, 95% CI: 1.02 to 3.03) was medium (eta squared = .12).

An independent samples t-test was conducted to compare the MCQ scores of recall between video/audio and read/write participants. There was a significant difference in scores between the two groups of participants, $t(117) = 2.39$, $p = .02$, two tailed with video/audio participants ($M = 4.83$, $SD = 1.32$) scoring higher than read/write participants ($M = 4.24$, $SD = 1.39$). The magnitude of the differences in the means (mean difference = .59, 95% CI: .10 to 1.08) was small (eta squared = .05).

Finally, an independent samples t-test was also conducted to compare the comprehension scores of recall between video/audio and read/write participants. There was a significant difference in scores between the two groups of participants, $t(117) = 4.46$, $p = .00$, two tailed with video/audio participants ($M = 4.38$, $SD = 1.64$) scoring higher than read/write participants ($M = 2.95$, $SD = 1.86$). The magnitude of the differences in the means (mean difference = 1.43, 95% CI: .80 to 2.07) was large (eta squared = .15).

Correlations

The third hypothesis proposed that participants who scored higher in the video/audio condition would also score higher in the visual and the auditory learning style.

The relationship between the video/audio total score and the visual learning style was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was no correlation between the two variables.

The relationship between the video/audio total score and the audio learning style was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a weak, negative correlation between the two variables, $r = -.27$, $n = 64$, $p < .05$, with low levels of the video/audio total score associated with higher levels of the audio learning style

The relationship between the video/audio comprehension score and the audio learning style was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a weak, negative correlation between the two variables, $r = -.28$, $n = 64$, $p < .05$, with low levels of the video/audio comprehension score associated with higher levels of the audio learning style.

Discussion

Hypotheses

The aim of the study was to investigate different ways of learning and to explore if there was a dominant way in which one can recall information. The study used an experimental design between two participant groups. The first group focused on a video/audio learning exercise in which they were asked to recall information that they learnt in terms of what they had watched and heard. The second group was asked to recall information based on what they read. Because of the nature of the study, the researcher formulated a questionnaire according to the video/text that was presented to the participants in the study. This included an MCQ with 6 closed questions, and 6 comprehension (open-ended) questions. A general feedback question was also devised by the researcher to assess the participant's self-report measures on how they found the study, followed by another self-report measure which sought the participant's learning styles and how they correlated to the study. The first hypothesis stated that there would be a difference between video/video learning and read/ write learning scores in terms of recall. Specifically, it proposed that the video/audio group will have higher recall scores than the read/write group. The second hypothesis aimed to see if there would be a difference in recall between the MCQ and comprehension question in both conditions. Specifically, it suggested that recall levels would be higher in MCQ's than comprehension questions in video/audio and read/write conditions. The third hypothesis then stated that there would be a difference in recall achievement between the two conditions depending on one's learning style. More specifically, it looked at whether individuals who scored higher on the visual and auditory learning style were more likely to score higher on the video/audio aspect of learning.

The first hypothesis was devised according to Fleming's theory (as cited in Allen et al, 2010). He argued that it appears that the whole education system focuses heavily on the read/write aspect of learning and there is little or no focus on the students and more focus on the teachers and their skills. Interestingly, Anker (2009) also stated that people would most likely claim to be read/write learners because the education system is oriented around that learning style. The aim therefore was to focus on the students specifically to observe their performance without supervision in both conditions. Research had also found that learning through audio has been found to be more effective than learning through text (Webb& Chang, 2014). Similarly Bickerdike et al (2014) have also found that audio learning was deemed suitable as a learning

preference for over 70% of students in the study. Likewise, video modelling was found suitable as a teaching method to children with autism who might not be able to read text for long periods of time (MacDonald et al, 2015)

The research findings above were consistent with the first hypothesis. The frequency tables in the current study found a higher level of total recall in the video/audio group compared to the read/write condition. The video/audio group also responded higher in both the MCQ and the comprehension questions compared to the second group. The findings of this study were consistent with the study that found that learning through text was not a good indicator or recall performance unless it was assisted by audio (Webb& Chang, 2014). Therefore it can be said that the use of audio is imperative for recalling information, which is probably why audio works better with video, allowing participants to watch and hear information. Independent sample's t-tests were also carried out to compare MCQ's, comprehension scores and overall total recall scores between the video/audio and read/write groups. All scores showed significant differences between the two groups. However, magnitude of difference was small in the MCQ total score while it was large in the comprehension score. Altogether, there was a medium magnitude of difference for all total scores in terms of recall. The large difference in the comprehension section was interesting to see as it conveyed participants responded better in video/learning group, which is something that should be taken account of in education systems.

As predicted in the second hypothesis, both participant groups were able to recall higher scores in the MCQ's than the comprehension section. This could have been due to the fact that MCQ's had other possible answers which could have allowed participants to easily remember what they may have read or seen in the video/text, whereas open-ended questions challenge the student to try and remember the answer without any form of help. This is consistent with findings from Ozuru, Briner, Kurby& McNamara (2013) that stated that MCQ's and open-ended questions generally measured different performance levels within a given comprehension.

The general feedback was also created by the researcher to observe how participants reported their experience during the study. Throughout the study, students in the video/audio group were generally happy as they reported that they found the study quite easy in terms of recalling new information and fairly interesting. This could have been due to the presentation of the video. Perhaps the design of the text might have not been too appealing to the reader's eye in the read/write group or the overall presentation might have included too many words for the

participants to take in. This could also have been due to the fact that the video/audio group had more students than the read/write group. Although, the difference in sample size wasn't large.

The third hypothesis was devised out of interest. It suggested that individuals who scored high on visual learning or auditory learning would most likely score higher on the video/audio aspect of learning. For a while now, learning styles have been questioned as to whether they truly exist or whether they're a valid measure. Some researchers have even investigated studies to see if there is a positive relationship between learning styles and achievement in comprehension tests (Rogowsky & Calhoun, 2015), through which no positive correlation was found. Research has also found that some teachers believe that certain learning styles are "useless" despite the fact that they knew little knowledge about it (Liu, Hu & Gan, 2013). However, previous study has found positive relationships between the PLSPQ, vocabulary strategies and academic achievement (Abidin et al, 2011)

The results in this study showed no correlation between the Total video/audio score and the visual learning style, conveying that there was no relationship between the variables. There was also a negative correlation that was observed between the auditory learning style and both the MCQ and comprehension. These results meant that if participants scored high in MCQ or comprehension scores, then they would score low in auditory learning styles. The results were quite surprising given that previous studies had supported the correlation between perceptual learning styles and achievement in all subjects. This could have been due to that fact that maybe the PLSPQ was perhaps outdated in terms of measuring. Also, it could depend on the content that was presented in other studies in terms of what was involved in the subjects that were measured, compared to this study that only had 12 questions. Finally since the questionnaire was initially devised for language students, it could be the reason for insignificant results towards total recall scores. The questions within the study were formulated by one researcher, compared to other research papers that had two or more researchers possibly agreeing on what questions to ask and how to carry out the whole procedure.

Strengths

One of the strengths in this study was the use of technology to gather participants. The use of technology made for a cost effective study in a way that paper questionnaires didn't have to be printed out and handed over to participants in the hope that they would complete the study. This was also time effective for both participants and the researcher in a way that the study took no longer than 15 minutes online, which might have cost more time on paper. Gathering data was also beneficial for the researcher as google forms was compatible with Microsoft Excel, which was compatible with SPSS, allowing data to be collected within a few minutes as opposed to a few hours. Participants were also at the luxury of completing their questionnaire at the comfort of their homes. In saying that, the sample of participants was relatively large at 119, even though the study had proposed to reach a number of 200 participants, with hopefully an equal division of males and females.

Limitations

The limitation was the fact that the participants who took part in the study were not supervised. Therefore, although it was imperative that they didn't go back over their answers once they had answered them, it is unknown as to whether they would manipulate the results or not. In saying that, Google Forms was able to create restrictions for the participants in a way that they wouldn't resubmit their answers again after they had responded once. The PSLPQ has also been previously mentioned as a limitation in a study (Khmkhien, 2012) and hasn't shown any valid scores or reliability. The initial questionnaire that this study proposed to use was the VARK Questionnaire. However, the VARK website did not permit any researcher to copy the questionnaire to Google Forms but only allowed paper questionnaires to be distributed. As it were, there was no time to distribute paper questionnaires to over 100 participants. PSLPQ was also a limitation in a sense that it didn't measure read/write learners. Even though the main focus wasn't entirely on this variable, it would have been beneficial to have had a learning style relating to it in order to make accurate comparisons between visual/auditory learners and read/write learners and also not to make the study appear biased.

One of the weaknesses in the study was the fact that questionnaires were sent out to individuals and some excluded answers in the study due to the fact that the questions weren't marked as "required" within the questionnaire (e.g. age). Such could have been avoided if the researcher had decided to formulate a pilot study prior to the official study. In saying that, if this was to be done in the future it would be imperative for participants in the pilot study not to take part

in the official one so as not to manipulate the results of the official study. Seeing that was the case, the researcher decided not to officiate a pilot study in order to get a representative sample size overall. The study overall was only limited college/university students, even though 3 students were in secondary school level education. This was due to the fact that most students had not yet been adults to take part in the study. Future research would aim to manage time better to allocate a representative sample between college and third level students even if it means allocating time to send out consent forms to teachers, parents or any guardians a few months before commencing the study.

Future Research

Research in the past has stated that future research should focus on learning styles to get a better understanding on them and how to apply it to academic achievement (Abidin et al, 2011). However little or no focus has been made on this. It would be interesting to find a learning style study that has drawn from previous learning styles and aims to incorporate the knowledge from them in order to make a universal measure that would aim to understand how individuals are able to recall information to their highest potential. Following up from this current study, it would also be noteworthy to observe what variable is the best predictor of recall. This would mean that further research has to be made and new measures would have to be carried out (e.g., multiple regression analysis). Interestingly, the greatest average number of participants recorded that they were group learners (see table 2). It would be interesting to see whether there would a difference in findings if this research study was replicated, only this time with 2 or more researchers taking part.

It would be noteworthy to examine technologies that aim to give a better understanding of learning, namely, eye tracking technology. Eye tracking studies have been used to observe learning differences in science texts with either text only, concrete (text with black and white image) and abstract (text with coloured image) illustrations through eye fixation data (Mason, Pluchino, Tornatora & Ariasi, 2013). The study first found that the use of concrete and abstract illustrations provided for better learning than just learning through text only. Finally, it was also found that gaze movements in the data indicated that readers made more effort to process text and pictorial information much more efficiently. Such knowledge would encourage authors to create more visual information to support their texts in order to promote the efficiency of learning within students and readers alike. The same authors observed how the knowledge processing of science text readers would differ depending on how argumentative

(refutation vs non- refutation) the text was by using eye movement analyses (Ariasi & Mason, 2010). The study showed that argumentative readers fixated more on the argumentative scientific text longer than non-argumentative readers, especially on the second time reading it. The idea behind this was that the introduction of scientific conceptions within a text would act as an alternative to understand the overall text. The research also argued that the more strategic the text was, the better it was for argumentative readers to learn from it (Ariasi & Mason, 2010). Although such information might be very complex, it does highlight some important point. The idea of fixations towards a preferred topic indicates enhanced learning through interest. For example, it is quite likely that if an individual has a specific way they can take in knowledge, they would most likely fixate on that. This may also promote the idea of learning styles and how they can affect the way one takes in knowledge. If an individual understands the type of learning style that they fall under, they're more likely to use that knowledge to build up their cognitive skills.

Implications and Applications

The overall implications were true in a sense that there is definitely more than one way in which an individual can recall information and that Video/learning is a dominant learning method in this generation according to the research above and the findings in this study. It is important to understand that technology has increased massively over the past few years, making it nearly the centre of everyone's attention in terms of interactivity. E-books incorporated by sound and online lecture videos are now being made available to individuals on social networks.

Applications of the study could be used in Universities/colleges, secondary and primary schools. The education systems should find ways in which they could incorporate various kinds of learning as opposed to just one. Although learning styles have been undermined, self-assessments claim otherwise. Individuals should be assessed in terms of their performance based on the learning style they claim they have as a trial basis. If performance levels increase in terms of recall, then education systems should consider observing the performance of learning in specific individuals on a longitudinal basis. This would control for a more stable environment for all learners and teachers within the education system. If teachers know the type of learners they have, it might increase their innovative skills in terms of creating new and efficient ways to learn as opposed to just assuming that everyone is a read/write learner.

Conclusion

In conclusion, the results supported the hypotheses to a certain extent. The first and second hypothesis were supported by the findings. This was an interesting and imperative findings because it something that should be taken account of in education and for future studies. Although the last hypothesis wasn't supported by the findings, several research has supported it and it could be that the measurement has to be updated to suit this generation. In saying that, it is also imperative as a self-measurement that individuals know the type of learning style that they belong to in order to observe whether there would be an increase in their performance in recall levels. Learning techniques would also serve to be beneficial for both the individual and the teacher in a sense that more focus on significant learning would be exerted within the educational environment. While this study was quite interesting, the results did indicate that there is a potential need to investigate further into learning styles and perhaps to perform more challenging studies in relation to this for future references.

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Appendices

Appendix 1: Information sheet

Video learning Vs Read/Write Learning

As part of my undergraduate Psychology Degree at the National College of Ireland (NCI), I am carrying out some research that will investigate how various types of learning and learning styles impact on recall of information. You are invited to take part in this study which aims to add to the already existing studies that encourage new learning methods for students in education. This study is supervised by Dr Rebecca Maguire, an active member of staff within the department of psychology at NCI.

The study will involve an experimental design using two groups. You will be randomly assigned one of these groups. The first group will read a short passage while the other group watches a video. Both of the groups will answer the same questions afterwards. Firstly, you will be asked to fill out a few demographic questions regarding your age group, gender etc. The questionnaires should take approximately 10-15 minutes to complete.

As part of the ethical code of conduct, all responses are kept anonymous and you have the right to withdraw at any time.

If there are any questions please do not hesitate to contact me or my supervisor Dr Rebecca Maguire (Rebecca.Maguire@ncirl.ie), If you would like to know the results of this study, they will be accessible from May 2016 if you contact me on the address below.

Thank you for your time and participation.

Innocent Matthew Mamphaga

innocent.mamphaga@student.ncirl.ie

Appendix2: Demographics

*Age **

Your answer

*Gender **

Male

Female

*Are you currently in **

Full-time Education

Part-time Education

Other:

*If in education, what degree are you currently studying? **

Business

Psychology

Computing

Law

Not currently studying

Other:

*Study Type **

Postgraduate

Undergraduate

Second Level

Other:

*Year **

1

2

3

4

Appendix 3: Video/Text activity

Video Link: <https://www.youtube.com/watch?v=0nFkQ4cQhME&spfreload=10>

TEXT:

This text will show how easily you can improve If you'd like to memorize ten times faster. One remembers information in two main ways main ways: as words, using your verbal memory or as pictures, using your visual memory. They're different mental processes and they achieve dramatically different results. People never believe how absolutely crazy the difference is. So here's a challenge for you and you can prove it for yourself. First let's test your Verbal memory. I'll give you a list of 10 words, let's see how many you're able to remember. Here we go:

- Piano
- Elephant
- Truck
- Bottle
- Basketball
- Chair
- Pineapple
- Dog

- Painting
- Trampoline

Alright take a moment, and think of all the words you can remember. If you're like the average person you're able to recall about five to seven words not necessarily in the right order. So that was your verbal memory, now let's test your visual memory. I'll give you another list of words but this time I'll also give a short story that will give you a mental picture. To activate your visual memory just create the mental picture of everything I describe in the story. Here we go

- Ferrari- Imagine you're driving a bright red Ferrari with the top down. The music is pumping about the throaty growl at the engine and your hair is blowing in the wind.
- Chicken- With a loud thump, a giant chicken lands in the seat next to you. It's the size of a person enormous, and yellow. It must have fallen out of the sky.
- Watermelon- The chicken opens the car door and leaps out onto the road. As it stands there an enormous grain watermelon rolls over the top of it and keeps rolling down the road.
- Barack Obama- You watch the watermelon roll down the road and straight into Barack Obama. The watermelon splits in half and Obama's left standing there, dripping in watermelon juice.
- Poodle- Obama picks up a passing poodle and uses it to wipe juice off his face. The poodle is pure white but as it soaks up water melon juice it slowly turns bright pink.
- Flagpole- Obama throws the poodle away, and it flies through the air and lands on the top of a tall flagpole. The weight of a juicy poodle causes the flagpole too slowly topple over.
- Cake- With a loud and messy splat the flagpole falls into the middle of an enormous birthday cake. Icing, cream and candles go flying everywhere raining down on people passing by.
- Doll- A large dollop of cream lands on the head of an over-sized Barbie doll. It creates a weird chemical reaction and the doll shoots into the sky like a space rocket, blonde hair trailing behind her.
- Pizza- The doll rockets upwards and just as it starts to fall a large pizza explodes open above her head like a parachute. The pizza is attached to the doll by long strings of melted cheese.
- Giraffe- The pizza eventually lands on the ground covering the doll and a giraffe walks over and starts eating the pizza bending its long neck and stretching its tongue to lick up the delicious cheese.
- Skateboard- After eating too much pizza the giraffe pulls out a skateboard, jumps on it, and starts gliding down the street, ducking signs and street lights as it rolls along.
- Cigarette- The skateboard begins coughing and it stops and uses one of its wheels to light a cigarette the cigarette becomes engulfed in flames and the skateboard throws it away.
- Statue of Liberty- The flaming cigarette flies through the air and lands on the torch being held aloft by the statue of liberty. The torch bursts into flames too.
- Ice cream- The Statue of Liberty comes alive and thrusts the burning torch deep into a big bucket have ice cream. It's cherry chocolate ice cream that melts and starts to bubble ominously.
- Fireworks- The ice cream explodes into fireworks lighting up the sky above the Statue of Liberty with brightly colored fireworks forming the words "the end".

Take another moment again and think of how many words you're able to recall using your visual memory. The trick is to recreate the picture in your mind of each image in this story. You will also notice that I did something sneaky, I gave you 15 words not ten but the average person would have been able to recall from 10 up to all 15 words and mostly in the correct order. Visual memory techniques have been around for thousands of years but for some strange reason most people only know verbal memory techniques. Verbal techniques are things like acronyms and acrostics, word associations and rhymes, and even songs. They all need a serious chunk of boring repetition. They can be fantastic for small number of words but they don't activate the amazing power of your visual memory.

Appendix 4: MCQ

Below are a number of questions on the content of the text. Please answer these as quickly and accurately as possible.

Q: According to the Video/Text in how many ways does one remember information? *

3

4

2

1

Q: According to the Video/Text, you can remember information as words using which memory *

Visual

Virtual

Recall

Verbal

Q: How many words were mentioned in the first challenge? *

10

13

12

8

Q: In the first challenge, what is the third word that was mentioned? *

Dog

Donkey

Elephant

Truck

Q: Which of these words was NOT mentioned in the first challenge? *

Piano

Chair

Cat

Bottle

Q: In the second challenge, what fruit rolls over the chicken as it gets out of the Ferrari? *

Banana

Watermelon

Pomegranate

Pineapple

Appendix 5: Comprehension Question

Written section

Q: When Barack Obama wiped His face on the fur of the poodle, the poodle turned from white to bright _____? *

Your answer

Q: Which Animal eats the pizza that falls on the ground over the doll? *

Your answer

Q: The statue of liberty dips the torch into a bucket of ice cream. How many flavors does the Ice cream have? *

Your answer

Q: What two words do the fireworks form? *

Your answer

Q: How many words were actually given in the second challenge? *

Your answer

Q: This video gave an account of the Visual Vs V_____ Memory *

Your answer

Appendix 6: General Feedback

Q: On a scale of 1-7 how easy did you find the task overall? *

Very Easy 1-7 Very Difficult

Q: On a scale of 1-7 how easy do you find it to learn and recall new information? *

Very Easy 1-7 Very difficult

Q: How interesting did you find this study? *

Very interesting 1-7 Not interesting at all

Appendix 7: PLSPQ

Perceptual Learning Style Preference Questionnaire

(Copyright 1984, by Joy Reid. Explanation of learning styles was adapted from the C.I.T.E. Learning Styles Instrument, Murdoch Teacher Center, Wichita, Kansas 67208)

Directions:

People learn in many different ways. For example, some people learn primarily with their eyes (visual learners) or with their ears (auditory learners); some people prefer to learn by experience and

/or by “hands-on” tasks (kinesthetic or tactile learners); some people learn better when they work alone while others prefer to learn in groups.

This questionnaire has been designed to help you identify the way(s) you learn best – the way(s) you prefer to learn.

Decide whether you agree or disagree with each statement. And then indicate whether you:

- Strongly Agree (SA)
- Agree (A)
- Undecided (U)
- Disagree (D)
- Strongly Disagree (SD)

Please respond to each statement quickly, without too much thought. Try not to change your responses after you choose them. Please answer all the questions.

PERCEPTUAL LEARNING STYLE PREFERENCE QUESTIONNAIRE

	SA	A	U	D	SD
1. When the teacher tells me the instructions I understand better.					
2. I prefer to learn by doing something in class.					
3. I get more work done when I work with others.					
4. I learn more when I study with a group.					
5. In class, I learn best when I work with others.					
6. I learn better by reading what the teacher writes on the chalkboard.					
7. When someone tells me how to do something in class, I learn it better.					
8. When I do things in class, I learn better.					
9. I remember things I have heard in class better than things I have read.					
10. When I read instructions, I remember them better.					
11. I learn more when I can make a model of something.					
12. I understand better when I read instructions.					
13. When I study alone, I remember things better.					
14. I learn more when I make something for a class project.					
15. I enjoy learning in class by doing experiments.					
16. I learn better when I make drawings as I study.					
17. I learn better in class when the teacher gives a lecture.	SA	A	U	D	SD
18. When I work alone, I learn better.					

19. I understand things better in class when I participate in role-playing.					
20. I learn better in class when I listen to someone.					
21. I enjoy working on an assignment with two or three classmates.					
22. When I build something, I remember what I have learned better.					
23. I prefer to study with others.					
24. I learn better by reading than by listening to someone.					
25. I enjoy making something for a class project.					
26. I learn best in class when I can participate in related activities.					
27. In class, I work better when I work alone.					
28. I prefer working on projects by myself.					
29. I learn more by reading textbooks than by listening to lectures.					
30. I prefer to work by myself.					

SELF-SCORING SHEET

Instructions

There are 5 questions for each learning category in this questionnaire. The questions are grouped below according to each learning style. Each question you answer has a numerical value:

SA	A	U	D	SD
5	4	3	2	1

Fill in the blanks below with the numerical value of each answer. For example, if you answered Strongly Agree (SA) for question 6 (a visual question), write a number 5 (SA) on the blank next to question 6 below.

Visual

6 - 5

When you have completed all the numerical values for Visual, add the numbers. Multiply the answer by 2, and put the total in the appropriate blank.

Follow this process for each of the learning style categories. When you are finished, look at the scale at the bottom of the page; it will help you determine your major learning style preference(s), your minor learning style preference(s), and those learning style(s) that are negligible.

SELF-SCORING SHEET

VISUAL

6 - _____

10 - _____

12 - _____

24 - _____

29 - _____

Total _____ x 2 = _____ (Score)

TACTILE

11 - _____

14 - _____

16 - _____

22 - _____

25 - _____

Total _____ x 2 = _____ (Score)

AUDITORY

1 - _____

7 - _____

9 - _____

17 - _____

20 - _____

Total _____ x 2 = _____ (Score)

GROUP

3 - _____

4 - _____

5 - _____

21 - _____

23 - _____

Total _____ x 2 = _____ (Score)

KINESTHETIC

2 - _____

8 - _____

15 - _____

19 - _____

26 - _____

Total _____ x 2 = _____(Score)

INDIVIDUAL

13 - _____

18 - _____

27 - _____

28 - _____

30 - _____

Total _____ x 2 = _____(Score)

Major Learning Style Preference	38-50
Minor Learning Style Preference	25-37
Negligible	0-24

EXPLANATION OF LEARNING STYLE PREFERENCES

Students learn in many different ways. The questionnaire you completed and scored showed which ways you prefer to learn English. In many cases, students' learning style preferences show how well students learn material in different situations.

The explanations of major learning style preferences below describe the characteristics of those learners. The descriptions will give you some information about ways in which you learn best.

VISUAL MAJOR LEARNING STYLE PREFERENCE

You learn well from *seeing words* in books, on the chalkboard, and in workbooks. You remember and understand information and instructions better if you read them. You don't need as much oral explanation as an auditory learner, and you can often learn alone, with a book. You should take notes of lectures and oral directions if you want to remember the information.

AUDITORY MAJOR LEARNING STYLE PREFERENCE

You learn from hearing words spoken and from oral explanations. You may remember information by reading aloud or moving your lips as you read, especially when you are learning new material. You benefit from hearing audio tapes, lectures, and class discussion. You benefit from making tapes to listen to, by teaching other students, and by conversing with your teacher.

KINESTHETIC MAJOR LEARNING STYLE PREFERENCE

You learn best by experience, by being involved physically in classroom experiences. You remember information well when you actively participate in activities, field trips, and role-playing in the classroom. A combination of stimuli-for example, an audio tape combined with an activity-will help you understand new material.

TACTILE MAJOR LEARNING STYLE PREFERENCE

You learn best when you have the opportunity to do “hands-on” experiences with materials. That is, working on experiments in a laboratory, handling and building models, and touching and working with materials provide you with the most successful learning situation. Writing notes or instructions can help you remember information, and physical involvement in class related activities may help you understand new information.

GROUP MAJOR LEARNING STYLE PREFERENCE

You learn more easily when you study with at least one other student, and you will be more successful completing work well when you work with others. You value group interaction and class work with other students, and you remember information better when you work with two or three classmates. The stimulation you receive from group work helps you learn and understand new information.

INDIVIDUAL MAJOR LEARNING STYLE PREFERENCE

You learn best when you work alone. You think better when you study alone, and you remember information you learn by yourself. You understand new material best when you learn it alone, and you make better progress in learning when you work by yourself.

MINOR LEARNING STYLES

In most case, minor learning styles indicate areas where you can function well as a learner. Usually a very successful learner can learn in several different ways.

NEGLIGIBLE LEARNING STYLES

Often, a negligible score indicates that you may have difficulty learning in that way. One solution may be to direct your learning to your stronger style. Another solution might be to try to work on some of the skills to strengthen your learning style in the negligible area.

(Adapted from the C.I.T.E. Learning Styles Instrument, Murdoch Teacher Center, Wichita, Kansas 67208. Used with permission.)