Stimulated Recall Using Autophotography - A Method for Investigating Technology Education

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Abstract
Stimulated recall is a research method that allows the investigation of cognitive processes through inviting participants to recall their concurrent thinking during an event when prompted by a video sequence or some other form of visual recall. In this study Stimulated Recall was used to facilitate students’ conversations about their own technological practice by using photographs the students took themselves or arranged to be taken and self-selected for the interviewing purpose. Six students in each of two primary classrooms: Year 2 (six to seven years old) and Year 6 (10 to 11 years old) were given a disposable camera and asked to photograph their practice. Participants were then interviewed, using a semi-formal approach, about their technological practice, with their autophotographs acting as a stimulus. This research project assumes a socio-cultural perspective and with the aim to gain an insight into the thinking behind participants’ decision making about developing a technological outcome to meet a specified need. It also aims to identify the role of quality learning conversations in undertaking and understanding technological practice. This paper outlines and evaluates Stimulated Recall using autophotography as a research method for use in general classroom based technology education.

Key Words
Stimulated Recall, technology education, sociocultural, conversations

Introduction
This paper discusses the use of Stimulated Recall as a tool for investigating Technology in the primary classroom. Stimulated Recall usually uses video and audio recordings of the participant in action, which they are later shown to use as a prompt and asked to reflect on. Typically, recordings are taken by researchers as part of their observational recording which are then used in the interviewing process (Moreland & Cowie, 2007; Slough, 2001). This study differs slightly in that the students were provided with disposable cameras to take the photographs of their practice themselves. They were able to request someone else take a photo for them if they wanted to feature in the photograph themselves. The photos were then used to stimulate the discussion with the researcher to talk about their learning. The process of the participants taking and selecting their own photographs is termed autophotography (Moreland & Cowie, 2007).

Technology involves students working collaboratively in the development and production of a technological outcome - a product or system that meets a previously
identified technological need (Ministry of Education, 2007). As students work together teachers facilitate learning and guide students through their technological practice. Teachers are often deeply involved in discussion and problem solving with individuals or small groups while others work quite independently. Involving the students in recording and recalling their own technological practice allows teachers to assess students’ technological processes as well as receiving further insight into technological outcomes developed.

**Stimulated Recall**

Stimulated Recall can be viewed as a subset of introspective research methods which accesses participants’ reflections on mental processes and has its origins in philosophy and psychology (Mackey & Gass, 2005). Lyle supports this view “Stimulated Recall is a family of introspective research procedures through which cognitive processes can be investigated by inviting subjects to recall when prompted by a video sequence, their concurrent thinking during that event” (Mackey, cited in Lyle, 2002). Slough (2001) credits Benjamin Bloom with the first description of “stimulated recall” in 1953 which he described as a method for retrieving memories. Many studies have used Stimulated Recall to study classroom practice and interaction (Beers, Boshuizen, Kirschner, Gijselaers, & Westendorp, 2006; Plaut, 2006; Sime, 2006; Slough, 2001). Both audio and video recording have frequently been used (Plaut, 2006; Seung & Schallert, 2004; Slough, 2001). Moreland and Cowie (2007) employed Stimulated Recall by using ‘autophotography’, photographs taken by children and then used as prompts in semi-structured interviews. Stimulated Recall interviews are used to gain qualitative insight into the actual working memory processes (Beers, Boshuizen, Kirschner, Gijselaers, & Westendorp, 2006). Plaut (2006) used Stimulated Recall to investigate students’ and teachers’ constructs of ‘confusion’ in their study of transferring teacher expertise to student teachers. Slough (2001) used Stimulated Recall with interviews, videotaping, observation and field notes, thus providing a comprehensive range of data. Beers and colleagues (Beers, Boshuizen, Kirschner, Gijselaers, & Westendorp, 2006) published a study into how information and communication technologies (ICT) tools augment learning in a variety of tasks (Seung & Schallert, 2004).

Stimulated Recall protocols should include opening interviews with background questions and open-ended prompts to give the researcher information on participants’ understanding (Plaut, 2006; Slough, 2001). Mackey and Gass (2005) suggest that when using Stimulated Recall extreme care must be taken, given issues of memory, retrieval, timing and instructions. The following recommendations are made to avoid the pitfalls associated with these issues:

- giving clear guidelines to each participant (Schepens, Aelterman, & Van Keer, 2007)
- carrying out the Stimulated Recall interviews as soon as possible after the actual incident (Mackey & Gass, 2005; Schepens, Aelterman, & Van Keer, 2007; Seung & Schallert, 2004)
- audio taping each Stimulated Recall interview (there are incidences of participants using observation field notes) (Seung & Schallert, 2004) and transcribed participant conversations (Moreland & Cowie, 2007; Schepens, Aelterman, & Van Keer, 2007).
o participants should be minimally trained to enable them to carry out the procedure but they should not be cued to extra and unnecessary knowledge (Lyle, 2002; Mackey & Gass, 2005)

o stimulus should be as strong as possible (Lyle, 2002; Mackey & Gass, 2005)

o if participants are involved in the selection and control of the stimulus episodes there is less likelihood of researcher interference (Lyle, 2002; Mackey & Gass, 2005).

Advantages of Stimulated Recall

One advantage of this approach is that Stimulated Recall data allows participants to explain their decision making (Mackey & Gass, 2005; Sime, 2006; Slough, 2001). The use of multimedia sources in recall sessions has the benefit of replaying and reintroducing cues that were present during the task (Sime, 2006; Slough, 2001). Stimulated Recall also provides an opportunity for real life context. It is a valuable tool when accompanied with ‘carefully constructed research designs’ (Mackey & Gass, 2005; Sime, 2006) and if the recall session is organised as soon after the event as possible participants are less likely to have to rely on memory alone (Lyle, 2002; Mackey & Gass, 2005; Sime, 2006). As a research tool Stimulated Recall requires a minimal training of participants into research goals (Lyle, 2002; Mackey & Gass, 2005; Sime, 2006) and it also allows relatively unstructured responses from them (Lyle, 2002). Stimulated Recall has considerable potential when studying cognitive strategies and other learning processes (Sime, 2006). Mackey and Gass (2005) suggest it is an effective way to gain the perspectives of learners, their interpretation of events and their thinking at a particular point in time.

Limitations

One limitation to Stimulated Recall is that recall procedures should occur as soon as possible after the task is completed. Once information is established in the long term memory is ceases to be recall or a direct report of the experience but rather reflection or a combination of experience and other related memories (Plaut, 2006; Sime, 2006; Slough, 2001). Another limitation is that participants may censor or distort their thoughts and ideas in order to present themselves more favourably (Seung & Schallert, 2004; Sime, 2006). Participants also have the opportunity of adding tacit knowledge and therefore possibly provide inaccurate reasons for their actions (Sime, 2006). Stimulated Recall alone does not capture teacher/students or student/student interactions over time. Stimulated Recall records participant’s thinking, but not their actual behaviour (Plaut, 2006), because classroom interaction is very complex and often automated with information being difficult to access (Lyle, 2002). It is therefore suggested that Stimulated Recall be used in conjunction with other data gathering strategies such as: observation, interviews, recorded conversations, and participants’ work sample to triangulate the data gathered (Plaut, 2006; Seung & Schallert, 2004; Slough, 2001).

This Study

This study is a small component of a PhD study and was undertaken in a primary school within the mid socioeconomic decile range in urban New Zealand. The aim of
the study was to gain insights into children’s learning in technology through an analysis of children’s conversations with their teachers and peers while participating in technology education. The researcher investigated what insight in children’s technology learning and understanding could be gained through the analysis of children’s conversations about their technological practice supported by autophotography as a recall tool.

Two classes participated, one Year 2 class (six years old) and one Year 6 class (10 years old). Over the period of a year, two technology units were taught in each class. The units were designed and planned by the classroom teachers in conjunction with the researcher taking the needs of the school into consideration. During the planning stage the teachers and researcher used *The New Zealand Curriculum* (Ministry of Education, 2007). Both units were taught at both levels.

The purpose of the first round was to enable the researcher to gain a rapport with the students and teachers to increase the likelihood of rich conversations during the second round and to teach the children how to photograph their learning. All the children in both classes were taught how to take photographs using a digital camera and were asked to photograph their learning in specially planned lessons. The identification of learning to photograph was very difficult and the children struggled with this task. Tullan put it very succinctly when he said to the researcher “I cannot photograph my learning, it’s in my head”.

During the teaching of the second unit, six children were selected from each class as research participants and all children were given a camera to record their learning and activity in the classroom. This time they were instructed to photograph the things they that thought might help them design and build their props and photograph the important stages in designing and building their prop. They were able to ask another person to take their photos if they wished to feature in them. At the conclusion of the unit the participants were interviewed using their autophotographs to assist them in the recall of their practice with the aim of gaining insight into their thinking, understanding and decision making.

**Methodology**

A qualitative methodology was used within a sociocultural framework. Fraenkel & Wallen (2006), Cohen, Manion and Morrison (2000) and Lichtman (2006) all cite a number of characteristics or critical elements of qualitative research. Those relevant to this study include:

- people construct their own meanings (direct link to social constructivist theory)
- meaning arises out of social situations and is handled through interpretive situations
- words and often direct quotes rather than numbers are used to illustrate a certain point- thick description is desirable
- researchers go into the natural setting to observe and collect their data and use everything from pad and pen to sophisticated audio and video taping equipment to gather data. They are very concerned with context
there is no one right way to conduct qualitative research. For example there are several ways to interpret what is seen and heard however, interpretation will hold more credibility if supported by well-organised data.

the researcher plays a pivotal role in the research, it is through the researcher’s eyes that the data is collected. Bias is a problem however; it can be eliminated or controlled through triangulation.

This research draws on aspects from the case study approach. The study took place in two classrooms, and the aim was to understand children’s thinking supporting their work in technology education. The research occurred in the natural setting, with a clear focus on the actions and interactions of the children and their teachers. The researcher’s role was clearly understood by all participants and she was clearly present in the classroom during data gathering, undertaking ongoing conversations with the children as they worked. The main phase of data gathering occurred during after round one during the teaching of the second unit in each class. In this unit the children were developing props for their class items in an upcoming school production. The unit was essentially the same at both levels. Data gathered included researcher observation, participant interviews, recorded and transcribed child/child and teacher/child conversations and child work samples and Stimulated Recall student interviews using autophotography of the technology process the participant children undertook.

Data Analysis

The autophotographs of twelve participant students were used in conjunction with semi-structured interviews to help recall the technological practice undertaken. Participant interviews were recorded as the participants discussed their photographs with the researcher and later transcribed. All photos and transcripts were printed and matched. The researcher then searched the data for emerging themes and patterns in relation to insight and evidence of participant learning within the field of technology practice in relation to The New Zealand Curriculum (Ministry of Education, 2007). Emerging themes were coded and included evidence of:

1) links in the participants decision making to prior learning both early in the unit and to prior knowledge
2) insight into technological practice in relation to the New Zealand Curriculum (Ministry of Education, 2007) Technological Practice Strand and including brief development, planning for Practice and Outcome Development and Evaluation
3) understanding or discussion around the technological process undertaken by the participants
4) insight into the advantages of working collaboratively

The photos and matching discussion also highlighted a number of issues associated with Stimulated Recall as a research tool. Data triangulation occurred through the use of collected work samples, interviews with the classroom teachers and researcher observations.
Findings

In this section significant findings are discussed in each of the categories mentioned in the section above; giving insight into the use of the Stimulated Recall as a research tool.

The autophotography and associated recall during their interviews provided clear evidence that children in both age groups were able to make links to prior learning. In Year 2 all six children identified significant learning by photographing work that related to the Taiwanese boat or to the fact that props established for the school production had associated specifications. Ryan was able to discuss the link between a real Taiwanese boat which they viewed on video and the need for a realistic Taiwanese boat prop.

*Ry:* it’s the part of the other boat, of the same boat but we painted it red and white instead of just red
*R:* Why, was the boat painted red and white?
*Ry:* Because that’s the same colour as the umm, real boat
*R:* Where was the real boat?
*Ry:* at Taiwan
*R:* In Taiwan. Why, are we making things for Taiwan?
*Ry:* Umm, because we’re doing a production about Taiwan

Anna was able to articulate that her group’s prop needed to be durable, and seen by the audience. She also recognised that a prop helps with the show, again items taught early in the unit.

*An:* we’ve also got some hot dog sticks in the tail so the tail wouldn’t flop around
*R:* Oh, why were they there? You said to flop around, why didn’t you want the tail flapping around?
*An:* Because, then nobody would see the tail

Ajay photographed the boat and also identified that it had to be ‘seen’ by the audience. These statements indicate that both Anna and Ajay drew on learning from a guest speaker from a local theatre who talked to the children about the need for props to be clearly visible, and from viewing a small stage play which used props and associated discussion about the props used. Following these two activities the children and the teacher established through co-construction a number of criteria for their props, among other things these included durability and visibility for the audience.

Conversations with the Year 6 children revealed that two of the children were able to put skills and knowledge they had learned at home from their parents to use during the development of their props. The students were asked to plan their final props to scale. Alex was able to employ a strategy used by his father, of drawing a ruler down by one side of the planning page. Below is the comment Alex shared with the researcher about the photo he requested the researcher take of him (Photo 1). The conversation also indicated that Alex knew that plans had to have considerable detail.

*Al:* we put like scale and yeah, just all that sort of stuff
*R:* How did you know to put all that on a plan?
*Al:* Well just because plans have like scales and all that……because I’ve seen plans that my Dad makes and stuff
*R:* Does your Dad deal with plans quite a bit?
Al: He designs..... rally cars and stuff
He also used one of his father’s terms ‘make-shift’ when referring to the making of mock-up washers.

Yeah. I basically did the stand. Then that’s a bad picture of it standing up again. And then, oh, yeah, that’s (pointing to one of his photos) the practice screws and making a ‘makeshift’ one, one of the makeshift washers.

Photo 1: Alex drawing the “scale” on one side of his planning paper

Stimulated Recall also allowed the researcher to identify the participants’ insight into technological knowledge and practice gained during the unit (Beers, Boshuizen, Kirschner, Gijseelaers, & Westendorp, 2006). Both classes of children and their teachers were undertaking their second unit of work in technology using the 2007 New Zealand curriculum- the first was done with the same researcher as an earlier part of this study. All but one of the participants in Year 2 recalled the term ‘mock-up’ and were able to articulate its purpose. One participant could not recall the name but understood it was ‘a practice’. Anna’s conversation below indicates a clear understanding of the purpose of producing a mock-up.

An: And then that’s our fish there. This is our umm, mock-up fish.
R: Tell me what a mock-up is.
An: Well, it’s something that is going to look like your real fish because we haven’t actually like done our real fish
R: So why do you do a mock-up first?
An: That gives you an idea what your fish is going to look like.

Ryan’s conversation with the researcher indicated that he has a very good understanding of what a plan was and the purpose of developing a plan. It also shows that he had an understanding of annotations (Photo 2).

Ry: The plan. This is the plan, it would tell you what it looks like
R: what else would it tell you?
Ry: How big and how long.
R: What is this? (Researcher points to mark on the photo)
Ry: That’s is part of the fish, it’s the eye
R: What’s this word here?
Ry: Eye
R: Why have you got that word written there?
Ry: Well, we write ‘eye’ there and then we do a point to where the eye is.

Photo 2: Ryan’s group’s plan with ‘annotated’ eye
In Year 6 the autophotography interviews revealed some quite sophisticated thinking in terms of technological practice and knowledge. Alex understood that one of the structured learning activities ‘Pros and Cons’ helped his group establish criteria for their prop. He also indicated that he used a mock-up to express an idea to his group. Alex had to change his technological outcome half way through to accommodate changing needs of a client. Alex and his group were designing a 1930’s style microphone for a pair of Olympic commentators who were to originally stand on stage. Alex’s responsibility was the stand for the microphone. When almost finished, Alex was informed by the script writers that the commentators would be seated at a desk on stage. The interview revealed that he was able to use the knowledge he had learned creating the first version to create the second in a fraction of the time. Also revealed was Alex’s understanding that the designed outcome must be functional and that he was happy to take his time “getting the design right”.

During her interview Millie happily acknowledged that her early design was not from the correct era- their prop needed to reflect the era 1900-1936 Olympic Games, this response indicated a clear understanding of the need to meet the established criteria for the project. When discussing the project she used the term ‘specifications’ correctly and that their identification was an important part of the design process. She also recognised that they could be referred back to. Millie’s recall also indicated that materials may have an impact on functionality and design and that a mock-up guided her practice.

Like Millie, Maddie’s interview revealed that she recognised the importance of specifications and she used ‘mock-up’ correctly, her interview signified she was aware of its importance. She recognised that planning needed to have scale; detail and different views and that ideas don’t always go to plan. Maddy was able to modify her ideas to fit cost and availability of materials.

Ma: that’s cutting out the wire for the speaker and it wasn’t, the speaker wasn’t really big enough so we had to cut out another one
R: Explain that to me a little more. Why didn’t you just make this bigger?
Ma: Well we couldn’t really because it was just a cut-off that Miss D [classroom teacher] had got for free because otherwise she would have had to pay for more.
Jiyong understood the purpose of the plan and the need for accuracy. He also used mock-up in context and the researcher was able to determine that he recognised initial research influenced final design and that materials are sometimes selected for ease of use. Jiyong’s interview also revealed that materials influenced the authentic appearance of the prop his team were developing, “These were our speakers and yeah, we did that on wire and we got, that card and we hot glue gunned them, it looks more like a radio and it kind of brings the message” and “Yeah, it looked, like an old radio”. Insight was also offered into Jiyong’s understanding of the need for his technological outcome to meet the established criteria, “then we’ve got to put a bit of cardboard over the top of it to make it strong and durable”. Tullan photographed a list of criteria needed for his prop, this was what he said about that photograph, “I was trying to remember …all of the things that the props need to go by, like durable, safe, ergonomically designed and the era and stuff”. From this statement we can see he clearly understood the significance of criteria to his practice.

Another aspect that the Stimulated Recall interviews gave insight into was the participants’ participation in technological design process. The participants were given freedom to photograph what they wanted to while developing their intended outcome; however the researcher did remind all the children about their cameras on occasions. When interviewed with their autophotographs all but one of the students offered some insight into aspects of technological process. In Year 2 Dylan was able to recall the papier maché making process, Ryan could give an overview of his total process and Ethan accurately described in detail the process of making the wings for his group’s fish. In Year 6 Alex recognised that experience from the first technology unit aided his practice, “it’s ok to change designs as you go”. Millie stated that the mock-up was something that she could refer back to, to assist her design process. Maddie recognised that one of the features on her mock-up was not needed in her final technological outcome and Tullan’s interview revealed that he understood the importance of planning for his practice and referring to it as a guide through the development phase.

Tu: Yeah, the timeline….was important because I had to remember what to do and remember what I had to put into my props
R: Why was the timeline important?
Tu: Umm, because otherwise you could have as long as you want and it, it, you might sort of forget about it….or you might sort of, I don’t know how to explain it, but sort of a deadline where you sort of have to have it done.

Working collaboratively was a significant component of the participants’ practice. One of Millie’s photos showed her working with her two team mates, and her comment indicated her appreciation of the process of putting together ideas from the group “And this (Photo 3) is us working on our final design with our, we’re like putting forward all our ideas”. The interview also revealed that she appreciated the ideas of others “it [the idea] came from Dochrane because he wanted to add it, it goes in the side of it so it can stay. It looks really good.”

Photo 3: Mille and team members working on their final design

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Discussion

Stimulated Recall has allowed the researcher to gain an insight into the participants thinking in relation to their technological practice, their interpretation of events and their thinking at a particular point in time that would have been difficult to have gained through direct observation and interview alone (Mackey & Gass, 2005). During the Stimulated Recall interview the autophotographs prompted children to recall and discuss aspects of their total practice that might not have otherwise been apparent or visible. In this section the findings are discussed around the four themes mentioned in the previous section.

From the interviews it became apparent that participant technological outcomes were clearly influenced by the prior learning experiences planned by the teachers as a part of the unit. The unit was collaboratively planned by the two participant teachers and the researcher. Before the children began the planning and the construction of their props a number of activities were planned to engage the children in developing their understanding of 1) the function and purpose of stage props and 2) the culture and or era of their production- which needed to be reflected in their props. Many of the autophotographs taken were of these activities and children were able to recall the activity and the purpose and direction of the learning facilitated by it. In Year 2 a number of visual activities the children undertook were deemed significant. These activities included a film clip of flying fish, a short film of Taiwanese fishing in action and a visiting speaker with a range of props from a local theatre. The data shows that these activities influenced their later practice. Two Year 6 children built on knowledge from their fathers to their outcome development during their practice. While this was not necessarily the reason they took the specific photographs, when interviewed both Alex and Maddie suggested their practice was influenced by something their fathers either did or said.

Participants were asked to take photographs of anything they thought was important and that would help them build their props and the important stages of building their props. Autophotography and the following interviews allowed the researcher insight into the depth of the participants understanding of technological practice (Mackey & Gass, 2005). Insight was gained through the selection of photographs taken and what they said about each photograph. The photographs evidenced significant aspects of their technological practice. In Years 2 and 6 children demonstrated their understanding of several aspects of technological practice. Information from the interviews shows that a majority of children engaged with and understood the term ‘mock-up’. Most of the participants photographed as least one aspect of their mock-up design and when talking to the researcher they were able to correctly explain its role
Another aspect of technological practice that was evidenced in the data was the participants’ understanding of and engagement with established criteria for their props. In Years 2 and 6 criteria were referred in a number of ways. Some participants linked to a guest speaker, others linked to a video of a stage show they were shown, others referred to the actual criteria that were co-constructed with the teacher in both classes. The participants’ understanding of the process and purpose of planning technological outcomes was another aspect of insight. Four Year 2 and four Year 6 participants specifically referred to their planning or their plan in the correct context - as a guide to inform the construction of their outcome, clearly indicating understanding of planning as a technological strategy (Sime, 2006).

For the purpose of this study the researcher differentiated between the participants understanding of specific terms and understandings as discussed above and their ability to identify and articulate design and construction processes they undertook. The data revealed that two Year 2 children were able to recall in detail aspects of their process for example: creating reinforced wings for Ethan, the process of papier maché for Dylan and Ryan was able to recall his total practice. In Year 6 four of the participants shared insight into the design process by discussing how their process changed as new information came to light either through failure analysis or interaction with peers and stakeholders. One child recognised that planning for his practice- task identification and associated timeline was able to guide his practice and keep him on task. Three of the Year 6 children specifically mentioned the benefit of referring back to either specifications, planning or task timelines. This clearly supports the literature claims that Stimulated Recall allows participants to explain their decision making (Mackey & Gass, 2005; Sime, 2006; Slough, 2001).

The final significant theme discussed in this paper is the insight gained into the participants’ opinions of working collaboratively. All children in both classes worked in groups of three to design and develop a prop for their class item in the school production. The researcher observed the participants struggling to work together collaboratively, they argued about their decision making, had difficulty in making decisions and frequently approached either their teacher or the researcher with problems they were experiencing working together. Surprisingly a number of autophotographs showed participants working in groups and when asked about working collaboratively five Year 6 and five Year 2 participants were able to identify positive aspects of group work. Recognition of the benefits of working collaboratively is significant because working collaboratively is an authentic way of undertaking technological practice (Turnbull, 2002). The data supports Doise and Mugny (1984) findings that children working in pairs solved problems at a more advanced level than those working by themselves.

Two issues compromised the use of Stimulated Recall with autophotography in this study. The children in both classes were given cameras to record their learning and practice. Disposable cameras were used (for practicality reasons and to prevent deletion of taken photographs) and therefore the interviews could not take place until after the conclusion of the unit and the photographs were developed. Ryan and Dylan, Year 2, had each forgotten what two of their autophotographs were and why they had taken them, even though the Year 2 children undertook their unit over a one week “technology week” and were interviewed the following week. Two of the
participants in Year 6 had also forgotten why they took the photographs. Plaut (2006), Sime (2006) and Slough (2001) suggest that Stimulated Recall should occur as soon as possible after the task is completed. Given that the Year 6 unit occurred over a five week period with the interviews taking place a further week after that it is hardly surprising that some participants had forgotten why they had taken a photograph. To avoid this in the future I would use digital cameras and interview each child at the end of each lesson or at the end of each day. However given the low number of forgotten photos and that all participants gave insightful comments related to their technological practice and process the researcher does not see this as an issue hugely affecting results.

Three of the children claimed that someone had “hijacked” their camera meaning the photo was taken by someone else when they had not requested it. Seung & Schallert (2004) and Sime (Sime, 2006) suggest participants may censor or distort their thoughts and ideas in order to present themselves more favourably. Whether “hijacking” occurred or whether the participants just took a few ‘off task’ photos was difficult to determine, however the result was the same, a few irrelevant autophotographs. Originally the researcher planned for students to take 15 autophotographs only; however the only disposable cameras available were 22 exposures. Given that the participants were given a finite number of photographs they were able to take there was a risk that they might have run out of photos on their cameras before the end of their technological practice. However most participants appeared to finish their cameras approximately in conjunction with their practice; some had photographs left on their cameras. Therefore a few ‘off task’ photographs would have had little impact on the selection of aspects of their practice the participants photographed. The researcher does acknowledge that some students may have taken more photographs during and at the end of their practice if more had been available. Another reason to suggest the use of digital cameras in future studies.

**Conclusion**

Stimulated Recall is a research method that allows the investigation of cognitive processes through inviting participants to recall their thinking during an event when prompted by some other form of visual recall. In this study Stimulated Recall using autophotography was used to recall learning and to facilitate participants’ conversations about their own technological practice.

In the first round all children in both classes were taught how to take photographs using a digital camera and were asked to photograph their learning in specifically planned lessons. The identification of learning to photograph was very difficult and the children struggled with this task. In the second round students were asked to photograph the things they thought might help them design and build their props and photograph the important stages in designing and building their prop. In the second round the students had complete ownership of the photos they either took or asked to be taken if they wanted to feature in a photo.

Stimulated Recall using autophotography has considerable potential as a research tool in technology education. Autophotography facilitates participant ownership of the items recalled. This participant ownership of the photographs taken is one advantage this method of Stimulated Recall has over ‘researcher taken video recording’. The selection photographs in itself gives insight into participant thinking about what is or
is not significant for them. Four themes emerged from the data which include insight into: participants’ use of prior learning and knowledge, participants’ knowledge and understanding of technological practice, the participant understanding and recall of technological process and participant thought and attitudes towards working collaboratively. This tool has allowed the researcher insight into the participants’ understanding of technological practice and process.

Reference List


