

My Interests Now for Engagement (MINE) - Identifying the dimensions of interest to support engagement and learning.

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Abstract:

Interest, as a motivational construct, is a necessary but not sufficient condition for engagement (Appleton, Christenson, Kim, & Reschly, 2006). If this is the case, then an examination of interest and its dimensions may be useful in the planning of engagement strategies. The purpose of the My Interests Now for Engagement (MINE) intervention is to develop, test and validate a tool to measure and profile interests in secondary school students using the four-phase model of interest development (Hidi & Renninger, 2006). The four-phase model of interest development distinguishes between those interests in objects, activities and ideas that are related to situations, and those that are integrated into the individual. The differing cognitive and affective states that are implied by this distinction may have implications relating to the design of engagement strategies. For example, those students who have a new or recently triggered interest may benefit from engagement strategies that are mentored, inter-personal and structured. In contrast, individuals who have a pre-existing well-developed interest that is personally integrated may benefit from engagement strategies that foster autonomy, curiosity and allow freedom of choice. The measurement of interest will be facilitated by using interactive, playful and exploratory online software (MINE), based upon the work of Jon Pearce (Pearce, 2008) at the University of Melbourne. The MINE tool allows for the triggering of new situational interests as well as the reporting of pre-existing individual interests. The tool has been developed with 100 first year students from the University of Melbourne and 100 students from secondary schools. This facility is in contrast to survey approaches that currently exist. This paper will examine the implications that the cognitive and affective dimensions of interest have for the design of engagement strategies, as well as report upon the design, development, testing, validation and preliminary results of the MINE tool.

Keywords

Motivation, interest, engagement.

Introduction

Challenging behaviour in secondary school classrooms is presenting ever-increasing problems for teachers in Australia and around the world (Cameron, 2007; Tomazin, 2009). Behaviour modification strategies have been developed as a reaction to this problem, but an increasing number of teachers feel pressured by the difficult and disruptive nature of these students (Cowley, 2006; Lewis, 1991; Richmond, 2007; Rogers, 2007). There are many causes for misbehaviour in the classroom, and the MINE study addresses one that is generally overlooked – student disengagement due to lack of interest in classroom tasks and the learning process.

The process of identifying lack of interest in learning as an antecedent to problem behaviour is not one currently employed in behaviour modification strategies used in Australia or the United Kingdom (Cowley, 2006; Cunningham & O'Neill, 2007; Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Richmond, 2007; Rogers, 2007). This is despite mounting evidence that student interest has a relationship with school achievement and by implication, the learning behaviour of students (Ames, 1992; Clarke et al., 1995; deCharms, 1984; Dewey, 1913; Ely, Ainley, & Bortoli, 2008; Hidi & Harackiewicz, 2000; Hunter & Csikszentmihalyi, 2003; Pintrich & Schunk, 2002; Vallerand, 2000).

Successfully engaging an individual is contingent upon many factors: age, gender, cultural background, ability, circumstances, social economic status, time of day, the number of people present, potential consequences, health, diet, language or level of interest. The MINE project seeks to address just one of these – the interests of an individual in engaging in the object, activity or idea.

Both engagement and interest are seen as important factors in the successful delivery of curricula in schools (Ainley, Corrigan, & Richardson, 2006; Appleton et al., 2006; Hidi & Harackiewicz, 2000; Renninger & Hidi, 2002). Positive psychology, alongside the research on interest highlights the positive affective components of interest in learning (Hidi & Harackiewicz, 2000; Seligman, Steen, Park, & Peterson, 2005)

There is mounting evidence from interest, engagement and positive psychology research indicating that there is a positive relationship between achievement and positive affect, cognition and well-being (Hidi & Renninger, 2006; Seligman et al., 2005). Despite this, contemporary behavioural management strategies ignore the *absence* of these factors as a potential antecedent to challenging behaviour.

In a previous study (Ely et al., 2008) it was clearly demonstrated that students with challenging behaviour expressed their personal interests and had their interest triggered by new things in their classroom environment. This previous study, using a mixed-method case study design, measured

intrinsic motivation and its relationship to achievement. When confronted with novel tasks many participants mentioned that they would “give it a go” indicating a triggering of situational interest in the content of the task. In the Ely et al 2008 study, students were asked to respond to two questions: ‘*Did you feel like you were doing what you wanted to do?*’ and ‘*Did you feel like you were doing what the teacher wanted you to do?*’. In their responses to 131 tasks completed in the classroom setting, the motivational response groupings in Table 1 were found to be naturally occurring.

Data suggested that from all 13 participants (14 to 16 years of age), if interest was triggered and then maintained throughout the task, students had higher levels of achievement (see Table 1).

Table 1: Motivational responses and task performance in 13 individuals with challenging behaviour

<i>Motivational response to task**</i>	<i>Percentage of participants in each task type (%)</i>	<i>Number of tasks in each task type</i>	<i>Percent age of total tasks (%)</i>	<i>Mean for task performance *</i>	<i>Standard deviation</i>
<i>Very Poor</i>	50%	10	7%	1.70	1.06
<i>Recalcitrant</i>	43%	9	7%	1.44	0.73
<i>Disengaged</i>	57%	17	13%	2.18	1.13
<i>Compliant</i>	77%	19	15%	2.63	1.12
<i>Autonomous</i>	46%	14	11%	3.36	1.15
<i>Fully engaged</i>	77%	33	25%	3.88	1.08

Notes:

**(Likert-like 1-5)*

**The 29 (20%) remaining ‘other’ tasks did not fall into the above categories

Conversely those for whom interest was not maintained over the task did not succeed to the same degree. This implies that if triggered interest was extinguished, rather than maintained for any given task, then the level of task performance was lower.

Simply put, boredom or lack of interest (and by implication, lack of engagement) has a negative relationship with achievement - and therefore

behaviour, in students who challenge teachers and situations at school. Despite this, levels of interest (or boredom) are not identified as potential antecedents to challenging behaviour as part of any contemporary behaviour management system currently used in English or Australian schools. Current strategies to manage the behaviour of ‘difficult’ students are teacher-directed, relying upon the teacher to implement systems to improve whole class, as well as individual behaviour (Cowley, 2006; Richmond, 2007; Rogers, 2005). From the perspective of research into behavioural modification several assumptions inhibit the investigation of boredom as an antecedent to challenging behaviour. Firstly, there is a perception that teachers in classrooms may not always have the training, time, or resources to discover individual students’ interests (Hidi & Harackiewicz, 2000). It is also a common perception that teachers do not have the time to ensure that students with challenging behaviour are fully engaged with learning in a class of over 25 students, each of whom have individual learning needs (Cowley, 2006; Lewis, 1991; Richmond, 2007; Rogers, 2007). Secondly teachers may conceive of interest as unchanging— something a student either has, or does not, and interest cannot be changed or enhanced by the teacher (Roberts & DelVeccio, 2000).

The My Interests Now for Engagement (MINE) project aims to challenge these assumptions, firstly by using an existing model of interest to develop a tool to profile the interests of students with challenging behaviour using web-based interactive exploration software (Pearce, 2008). Secondly, the interest profiles of students with challenging behaviour can be used to target engagement strategies for the benefit of the student in terms of both on-task activity and achievement, and therefore classroom behaviour.

The MINE project involves gathering information about the interests of the individual students in the form of an interest profile. The application of interest profiles may be of use to teachers, as a student who is interested is more likely to be engaged in a classroom task (Appleton et al., 2006). A student who is engaged in a task is more likely to be achieving and behaving well (Hidi & Harackiewicz, 2000) but it is necessary first, to address the problem of identifying and measuring interest in secondary students at school.

A model and tool to profile interest

Interest as a motivational variable refers to a psychological state of engaging or a predisposition to re-engaging with objects, events or ideas over time (Hidi & Renninger, 2006) and interest is defined as specific to an object, activity or idea and is not considered a trait or predisposition that applies in all situations (Renninger, 2000). With interest defined as a relation between person and interest object, its stability is partially contingent upon environmental factors. The perception that existing interests are unchanging,

as put forward by Roberts and DelVeccio (2000) can be misunderstood to be suggesting that if interest is not present then it cannot develop. This leads to the misconception that interest is something that a student either possesses or does not, and teachers may not be aware that they, as external agents, may make a contribution to academic interest (Ainley, Hidi, & Berndorff, 2002; Hidi & Baird, 1986; Hidi & Renninger, 2006; Renninger, 2000). When interest is triggered and grows, so can its value as an antecedent to effective creative engagement.

The measurement of interest in this study will draw upon the four-phase model of interest development (Hidi & Renninger, 2006) which makes a distinction between situational and individual interest. Situational interest refers to focused attention and the affective reaction that is triggered in the moment by environmental stimuli. Individual interest describes a person's relatively enduring predisposition to re-engage with particular content over time as well as to the immediate psychological state when this predisposition has been activated (Hidi & Renninger, 2006; Renninger, 2000).

If a teacher becomes aware of a students' interests, they may support this interest development from triggered situational to the well-developed individual interest by using creative engagement strategies. Interest is also identified as an important condition for learning, in particular for the academically unmotivated (Hidi & Harackiewicz, 2000). In the educational context where objects, events and ideas are integral building blocks of the teaching and learning process, the definition of interest as an outcome of an interaction between an individual and specific content in the classroom is particularly relevant (Hidi & Baird, 1986; Krapp, 2000).

Hidi and Renninger (2006) have elaborated the distinction between situational and individual interests into a four-phase model describing the development of interest from the initial triggered stage through to the longer-term well-developed interest. According to the model, situational interest is the basis for emerging individual interest and for this reason is particularly relevant in the educational context. The four phases contained within the model are described briefly below.

Phase 1: Triggered Situational Interest

Triggered situational interest refers to a psychological state of interest that results from short-term changes in affective and cognitive processing. Certain creative engagement such as group work, puzzles and computer based activities are known to trigger situational interest (Cordova & Lepper, 1996).

Phase 2: Maintained Situational Interest

Maintained situational interest refers to a psychological state of interest that involves focused attention and persistence over an extended period of time however the triggered situational interest has been maintained

through task relevance and personal involvement (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000). Within the classroom setting, structured creative engagement strategies typically provide external supports that lead to maintained situational interest (Renninger & Hidi, 2002; Wolters, 1998).

Phase 3: Emerging Individual Interest

Emerging individual interest refers to a stage in the development of an individual's interest where they start to seek out opportunities to re-engage with a particular objects/activities/ideas over time. Activities are typically self-generated, but an individual may require external support in the form of models, peers, clubs, teachers, parents, environment and resources (Renninger, 2000).

Phase 4: Well-Developed Individual Interest

A person with well-developed individual interest will tend to make opportunities to re-engage with objects activities or ideas over time (Hidi & Renninger, 2006; Renninger, 2000; Renninger & Hidi, 2002). Specific engagement strategies that include less prescriptive curriculum and greater challenge may lead to improved knowledge building and achievement (Renninger & Hidi, 2002).

The MINE intervention and the four-phase model

Initially the MINE program presents the individual participant with an interactive exploratory environment populated with 60 interest cells that allows them to explore their own interests. Using a series of five 'sliders' they are asked to generate a general interest profile (see figure 1). Each of the 60 interest cells has embedded values (1-11) that relate to each of the 'slider' variables. The sliders represent interest dimensions represented in the top right of Figure 1. This process creates an environment where potential interest cells become more or less prominent to the user depending upon the position of the sliders. The process is fluid and set in real time. Once the participant wishes to select a potential interest cell they can drag it into their 'interest box' and this indicates that they have identified something that reflects an interest they personally identify with at that time. When the respondent has selected no fewer than 3 interests they may move on to the next phase.



Figure 1: Screenshot of the exploring phase of MINE

Once interests are selected participants are asked to respond to a number of questions relating to the interests that they have selected (see Figure 2).

The screenshot shows the 'Clothes' section of the MINE program. It includes a title 'Clothes' with a small image of colorful clothes, a subtitle 'The sorts of clothes that you wear everyday', and two radio button options: 'I am interested in this' and 'I might be interested in this'. Below these is a text box with the prompt: 'Please tell us more about YOU and the sorts of things YOU do when engaging in 'Clothes''. To the right, there are several slider questions:

- 'I can tell you what I think and feel about 'Clothes' by moving the sliders below' with a slider for 'I have been doing this?' ranging from 'Just now' to 'A very long time'.
- 'This is how often I engage in this?' with a slider ranging from 'Never' to 'As often as I can'.
- 'This is how much effort it takes me to do this?' with a slider ranging from 'It comes easily to me' to 'Requires a lot of effort'.
- 'For me, time passes quickly?' with a slider ranging from 'Not at all' to 'Frequently'.
- 'I do this again and again?' with a slider ranging from 'No' to 'Yes'.
- 'When I engage in this I feel?' with a slider ranging from 'Not at all' to 'All the time'.

Below the 'When I engage in this I feel?' slider, there are seven horizontal sliders for the following emotions: Happy, Hopeless, Proud, Angry, Anxious, Hopeful, and Sad. A 'Done' button is located in the bottom right corner.

Figure 2: The measurement phase of MINE

These questions in Figure 2 are designed to gather responses indicative of the cognitive and affective dimensions that have been associated with their chosen interests and this will allow us to identify its 'phase' within the four-phase model of interest development. The following parameters for distinguishing the four phases of situational and individual interest (Hidi & Renninger, 2006), will be used for this identification of phase of interest development.

Triggered situational interest is characterised by positive affective responses (joy, excitement, pride and hopefulness), a greater degree of effort, little or no previous experience and a greater need for external support. The time period may even be as short as "just now" as the MINE program allows for the triggering of interest itself. A response of "I might be interested in this" indicated a triggering of interest by the MINE process itself.

Maintained situational interest is characterised by positive affective responses a greater degree of effort, some re-engagement, less experience and a need for external support.

Emerging individual interest is characterised by individual who expressing knowledge, willingness to reengage, experience (engaged over time), effortlessness, and a complex affective response to the particular interest cell. Some external supports may still be relevant and participants will perhaps have less experience in engaging with a particular interest cell.

Well-developed individual interest is characterised by an individual who expressing knowledge, willingness to reengage, experience (engaged over time), effortlessness, and a complex affective response to the particular interest cell.

Preliminary results

The development and piloting of the MINE online tool firstly requires design and development, delivering the above specifications in a fluid online environment. To determine the slider settings for the 60 potential interest cells, 136 students (18 to 19 years old) were invited to make ratings on a 10-point scale for each of the five slider dimensions (see Figure 1) on a 10-point scale. Results showed that there was enough commonality of responses to the five slider dimension responses used in the exploratory phase. There were no strongly bi-modal distributions in the patterns of ratings. . On this basis the mean values generated from these participants will be used to set the five embedded parameters for every potential interest cell. Sixty potential interests were included when gathering these ratings as part of the MINE project development process and in addition, each participant was ask to add any interest they felt was missing. Some participants added further interests but across these suggestions there were no recurring interests requiring additions to be made to the current list of potential interests offered by the MINE tool. There were some indications among participants that there may have been clusters of ‘chronically interested’ and ‘chronically bored’ participants as defined by Hunter & Csikszentmihalyi, 2003 and further analysis of these constructs is under way.

The continuing MINE project

Following the development of the MINE tool, the program will now be used to measure interest at two distinct test points 2 months apart with 100 students in the target age range (14-17 years old).

For the MINE tool to be considered valid and reliable, those interests that have been identified as emerging (phase 3) or well-developed

(phase 4) individual interests at test point 1 of will be expected to be present at test point 2, and those interests expressed as triggered (phase 1) or maintained (phase 2) situational interests will either have developed, remained situational or be absent at test point 2.

Outcomes and Implications of MINE

The development, testing and validation an effective tool to measure the dimensions both the cognitive and affective dimensions of interest as well as generation of individual interest profiles for students has practical implications in the implementation of creative engagement strategies. As interest is a necessary but not sufficient condition for engagement (Appleton et al., 2006) identifying the *type* of interest (situational or individual) allows for *appropriate* engagement strategies to be designed. In addition, the development, testing and validation of an effective tool that provides an environment to trigger situational interest as well as measuring pre-existing interests can create situations that allow creative engagement strategies to be used appropriate to an individual who has their interest triggered.

Conclusion

If a student is experiencing a newly triggered situational interest, then engagement strategies will be more likely to succeed if they include bounded structured activities that are clearly expressed and students are provided with resources, interpersonal interactions and one-on-one tuition. If such a student were instead presented with engagement strategies that involved persistence, complex problem-solving tasks, open ended and unstructured resources or requirements to engage autonomously then the process of engagement may fail to deliver any learning outcomes. Conversely, if a student has a well-developed interest and identifies personally with the object, activity or idea, then the above situation would be reversed. Bounded, simplistic, overly structured engagements may lead to frustration and disengagement while allowing for autonomous, complex, meaningful engagements that may even require persistence, or working through adversity may lead to good learning outcomes, and even the genuine satisfaction of a job well done.

It has to be said that good teachers can naturally discriminate between phases of situational and well-developed individual interest by the simple process of inquiry in pre-existing positive interpersonal relationships between teachers and students. The potential benefits of the MINE process are that the tool is not only an aid in this process of enquiry, but MINE can trigger interests as part of its internal exploratory process.

Bibliography

- Ainley, M., Corrigan, M., & Richardson, N. (2006). Students, tasks and emotions: Identifying the contribution of emotions to students' reading of popular culture and popular science texts. *Learning and Instruction, 15*, 433-447.
- Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning, and the psychological processes that mediate their relationship. *Journal of Educational Psychology, 94*(3), 545-561.
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261-271.
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. (2006). Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology, 44*, 427-445.
- Cameron, D. (2007). Call that election. We will fight. Britain will win. Retrieved 3/10/07, 2007, from http://www.conservatives.com/tile.do?def=conference.2007.news.story.page&obj_id=139453&speeches=1
- Clarke, S., Dunlap, G., Foster-Johnson, L., Childs, K. E., Wilson, D., White, R., et al. (1995). Improving the conduct of students with behavioral disorders by incorporating student interests into curricular areas. *Behavioral Disorders, 20*, 221-237.
- Cordova, D. I., & Lepper, M. R. (1996). Intrinsic Motivation and the Process of Learning: Beneficial Effects of Contextualisation, Personalisation and Choice. *Journal of Educational Psychology, 88*, 715-730.
- Cowley, S. (2006). *Getting the buggers to behave*. London UK: Continuum Books.
- Cunningham, E. M., & O'Neill, O. E. (2007). Agreement of functional behavioural assessment and analysis methods with students with EBD. *Behavioral Disorders, 32*(3), 211-221.

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- deCharms, R. (1984). Motivation enhancements in educational settings. In R. A. Ames, C. (Ed.), *Research on Motivation in Education* (Vol. 1, pp. 273-310). New York: Academic Press.
- Dewey, J. (1913). *Interest and effort in education*. Boston: Riverside.
- Dunlap, G., Kern-Dunlap, L., Clarke, S., & Robbins, F. R. (1991). Functional assessment, curricular revision, and severe behaviour problems. *Journal of Applied Behavior Analysis, 24*, 387-397.
- Ely, R., Ainley, M., & Bortoli, A. (2008). *"But I Don't Want To": Complying With the Wishes of the Teacher - A Necessary But not Sufficient Condition or Learning in Students With Challenging Behaviour*. Unpublished Masters, Melbourne University, Melbourne.
- Harackiewicz, J. M., Barron, K. E., Tauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short term and long term consequences of achievement: Predicting continuing interest and performance over time. *Journal of Educational Psychology, 92*, 316-330.
- Hidi, S., & Baird, W. (1986). Interestingness - A neglected variable in discourse processing. *Cognitive Science, 10*, 179-194.
- Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A critical issue for the 21st Century. *Review of Educational Research, 70*(2), 151-179.
- Hidi, S., & Renninger, K. A. (2006). The Four Phase Model of Interest Development. *Educational Psychologist, 41*(2), 111-127.
- Hunter, J. P., & Csikszentmihalyi, M. (2003). The positive psychology of interested adolescents. *Journal of Youth and Adolescence, 32*(1), 27.
- Krapp, A. (2000). Interest and human development during adolescence: and educational-psychological approach. In J. Heckhausen (Ed.), *Motivational psychology in human development* (pp. 109-128). London: Elsevier.
- Lewis, R. (1991). *The discipline dilemma*. Hawthorn, Vic.: ACER.
- Pearce, J. M. (2008). *A System to Encourage Playful Exploration in a Reflective Environment*. Paper presented at the EdMedia 2008 Conference.

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- Pintrich, P. R., & Schunk, D. (2002). *Motivation in education: theory, research and applications* (2nd ed.). Upper Saddle River, N.J.: Prentice Hall.
- Renninger, K. A. (2000). Individual interest and its implications for understanding intrinsic motivation. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 375–407). New York: Academic.
- Renninger, K. A., & Hidi, S. (2002). Student interest and achievement: Developmental issues raised by a case study. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement Motivation* (pp. 173–195). New York: Academic.
- Richmond, C. (2007). Behaviour management hits the road: confessions of a travelling scholar. *Teacher: The National Education Magazine*(May 2007), 22, 24-26.
- Roberts, B. W., & DeLVecchio, W. F. (2000). The rank-order consistency of personality from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin*, 126(1), 3-25.
- Rogers, W. A. (2005). *Cracking the challenging class* [videorecording]. Melbourne: Rogers Education.
- Rogers, W. A. (2007). *Behaviour management : a whole-school approach* (2nd ed.). London: Paul Chapman.
- Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive Psychology Progress: Empirical Validation of Interventions. *American Psychologist*, Vol. 60(No. 5), 410–421.
- Tomazin, F. (2009, 15/09/09). Sharp rise in student suspension. *The Age*.
- Vallerand, R. J. (2000). Deci and Ryan's self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation *Psychological Inquiry*, Vol. 11(, No. 4), pp. 312-318.
- Wolters, C. A. (1998). Self-regulated learning and college students' regulation of motivation. *Journal of Educational Psychology*, 90, 224-235.

