

Maths Challenges for Pre-service Teachers

Abstract

This chapter reviews literature on maths anxiety, numeracy levels and equity issues in order to clarify maths challenges experienced by pre-service primary teachers. Vignettes drawn from data from an on-going research project are utilised to highlight the issues impacting two cohorts of pre-service teachers. Specific maths help is often un-targeted and groups thought to be at high risk are often on the margins and miss out on needed help because it is not effectively offered and/or is culturally inappropriate. These challenges have high significance as many current pre-service Education students exhibit difficulties with maths. The chapter concludes by discussing the question of ‘Where to next?’

Keywords: Maths Anxiety, Numeracy Level, Pre-service Primary Teacher

Background

Research into maths anxiety related issues has been documented for many generations and, despite the best efforts of classroom innovators, a sizeable number of our students still suffer from it (Flegg, 2007). This study looked at literature from over the English speaking world; it summarised that up to 30% of school students were either over-anxious causing them to perform poorly or had difficulties with their maths in some way and demonstrated that no country had found an answer to the problem. The term ‘maths anxiety’ was being used here as a general term which included both maths anxious students and those who have difficulties using maths because many of those who have difficulties are also anxious about their lack of performance. Distinguishing between the cohorts is difficult as not all maths anxious students perform poorly and not all those who perform poorly are anxious. Hence, collecting specific quantitative data using a maths anxiety approach has proved problematic. This difficulty is amplified when focusing on marginal groups of students, such as Indigenous and low socio-economic groups, especially when many of these are also the first in their family to attend university. In this chapter an alternative approach is taken through looking at individual cases and the circumstances that they perceive have led to their experience of mathematics anxiety.

The anxiety, however caused, often relates to students who have ongoing difficulties performing at a suitable standard. It could be said that the problem had been put into the too difficult category as the following quote implies: “By ignoring the powerful role that anxiety plays in mathematical situations, we are overlooking an important piece of the equation in terms of understanding how people learn and perform mathematics” (Maloney & Beilock, 2012, p. 405). For the purposes of this chapter, the term ‘maths challenged’ better describes all those who need help, whether anxious or not. Qualitative data in the form of vignettes will be used to highlight some of the issues rather than trying to distinguish specific quantitative data. That many of our pre-service teachers have been and still are maths challenged (Harper & Daane, 1998; Trujillo & Hadfield, 1999; Vinson, 2001; Haylock, 2001; Swars, Daane & Giesen, 2006; Bursal & Paznokas, 2006; Iossi, 2007; Flegg, Mohamed & Trimmer, 2013) should not be unexpected if maths anxiety is both so entrenched and ignored; hence “this knowledge (of the size of the potential problem) provides a wake-up call for universities to look at their pre-service teacher programs” (Flegg et al., 2013, p. 1) in order to help students overcome their difficulties in order to perform at a suitable standard for a potential primary school teacher.

Everyone has the right to be numerate in order to facilitate living fulfilling lives, but it is a critical construct for primary school teachers who are tasked with helping new generations of students to become numerate. The definition being used here is the one created by the Australian Association of Mathematics Teachers in 1998 after extensive member consultation and a special purpose conference, as quoted and used by Sullivan (2011) writing in the Australian Educational Review:

Numeracy is "... a fundamental component of learning, discourse and critique across all areas of the curriculum" involving a disposition and willingness "... to use, in context, a combination of: underpinning mathematical concepts and skills from across the disciplines (numerical, special, graphical, statistical and algebraic); mathematical thinking and strategies; general thinking skills; and grounded appreciation of context."

In more colloquial terms, numeracy is being able to apply maths in context (across all areas of life in the real world). The current Foundation to Year 10 Australian Curriculum for Mathematics (ACARA, 2011) is based upon three strands, namely Number & algebra, Measurement & geometry and Statistics & probability. Whilst knowledge and understanding of all three strands is clearly necessary to being numerate using our definition above, it is the Number & algebra strand that, in our experience, most people seem to associate with their level of maths ability, however incorrectly. "Number Knowledge consists of formal ideas concerning numeration and place value and informal ideas that we call number sense" (R. Jamieson-Proctor, USQ EDX1280 lecture notes, 2013). The former are taught in our early years' primary school classrooms; these include understanding number concepts, the knowledge of our number facts and learning strategies to extend their use, especially for mental computation. The latter consist of ideas such as "Have you enough money to pay for your lunch?" and recognising when a number is representing real items or just a label like a phone or bus number; these are understandings that are developed over time and use the formal, taught mathematics as a base to build themselves upon. If our pre-service teachers lack numeracy skills themselves, as found in the authors' study quoted earlier where 30% were maths challenged and hence would be unable to apply maths they didn't themselves understand, then we just perpetuate the problem in our society at large.

Marginal groups are being defined here as those broad sections of society who have a history of disadvantage, including those of Aboriginal and Torres Straits Islander descent, those from low SES backgrounds and those who left school early, as well as those who are the first to study at university level in their family. This is not meant to be an inclusive list, as disadvantage has many causes, nor is it meant to imply that all in these categories necessarily have any problems.

Discussing marginalised groups in this general way the authors believe helps to place this qualitative study in a context, one where the reader may research further themselves if they wish to try to quantify the groupings especially when they can be expected to overlap considerably. In addition, many of those within one or more of these groups come from minority groupings within society and the authors believe that this could cause significant additional disadvantage.

The following vignette illustrates one of the problems many in these overlapping groups suffer when relating their own world to the more formal study of maths, namely accepting that they are proficient in some areas and using this confidence to build up their knowledge in areas where they have less understanding. Both were numerate when problems related to their everyday experience. However, both were highly anxious regarding maths and are unable to complete simple tasks in a formal maths learning environment.

Through her teaching, Trimmer experienced examples of this distinction and its relationship to maths anxiety for marginal groups. .

(1) Betty is an Aboriginal woman in her 50's who was returning to the workplace after raising her family and enrolled as a pre-service teacher undertaking a Bachelor of Arts (Primary) in a regional location. Her schooling had been up to senior primary level at a mission school in a remote location in Western Australia. She had significant maths anxiety and was phobic of using, or even holding, a calculator. When constructivist modes of teaching were used to place number concepts into real life circumstances, with no mention of their relationship to maths, she was able to grasp concepts and solve practical number problems. This included mental computations with number facts in the context of shopping, the use of fractions and measurement in cooking and the understanding of chance and probability through card games.

(2) Douglas is a young man from a low SES, dysfunctional family who had completed primary school successfully. He had left school before the end of Year 10 to take a labouring job. He had experienced significant poverty and unemployment before considering returning to education as a teacher. His mental calculation skills in the context of darts and card games were extremely proficient and his measurement and estimation skills in regard to construction problems, including complex costing of jobs, were excellent. Douglas did not consider these real life contexts as maths. If a simple construction problem was given to him in written form, he would panic and not know how to start with the conceptualisation of what was being asked.

Equity Issues

In Australia today, as in past years, there are still considerable numbers of people in marginal groups whose mathematical potential is assumed to be underdeveloped. Mathematical

knowledge and confidence seems to remain largely the province of mainstream non-Indigenous males, although we are not trying to quantify numbers here. The flight, fright, of Indigenous people and many women from maths begins during their schooldays. These marginal groups, of which women have been classified historically as one of in the literature, apparently have an equal opportunity to pursue maths, but a wide range of influences seem to be at work to persuade them that maths is not for them. If these persons then move on to become teachers, this lack of knowledge and of confidence can have a flow on effect that perpetuates these outcomes across generations as the interactions that occur between teacher and pupils are clearly very important. In his earlier study, Flegg (2007) suggested that teachers who dislike teaching mathematics (usually for confidence reasons) at school had difficulty themselves at school. This current research project focusses on influences on individual pre-service teachers which impact on their level of maths challenge and intends to explore how this impacts on their participation, achievement, confidence and retention.

There appears to be a progressive deterioration in both participation and achievement as these marginal groups proceed through secondary school. There have been many factors put forward as affecting maths anxiety and participation, including social attitudes, internal characteristics of particular marginal groups and educational factors. Social attitudes and, in particular, expectations of peer group and family about maths and their attributions of success and failure in maths have been found to affect learning, participation and levels of anxiety. In the 1993 report of the Australian Council for Educational Research (as cited in Maslen, 1994) for the study *Subject Choice in Year 11 and 12*, it was found that having a parent who had participated in higher education also greatly increased the probability of a student selecting to study maths in upper school. The survey of 20,000 students also found a strong link between socio-economic status and enrolment in math courses.

Brookover and Erickson (1975) developed a theory which suggests that the expectations of other people, especially those who are viewed with respect, credibility and trust, have a significant impact on an individual's view of their abilities and appropriate behaviour for certain situations and roles. They believe that an individual's learning is dependent upon the decision to learn and individuals choose to learn what has been defined by others to be appropriate and within that individual's capabilities. These expectations (assuming that the theory is still appropriate for current individuals) could have profound implications for perpetuating attitudes and

participation of marginalised groups, as well as for some girls, if maths is seen to be perceived by society, family and teachers as hard or inappropriate as a course of study for these groups. Whilst these comments could well be seen as applicable to many areas of study, maths is the subject that society clearly has a problem with, as maths anxiety is often talked about whilst the authors have never heard any student or parent talk about history anxiety, for instance.

Similarly, there is a considerable body of evidence to indicate that peer relationships are also important in providing expectations, models and reinforcements that help shape an individual's social behaviour, attitudes and perceptions. For example, over 40 years ago, Fagot and Patterson (1969) found that social rewards are exchanged within the peer culture according to the gender-appropriateness of the child's behaviour. Since this time, a number of critics (Fensham, 1980; Lydeamore, 1993; Ward, Lee, Baptist, & Jackson, 2010) continue to see the under-participation of marginal groups as a consequence of a competitive, patriarchal and capitalist society. They argue too that in some of these groups, women are encouraged to be emotionally and financially dependent upon men. While trends for girls and young women are improving, adult women still account for two-thirds of the more than 770 million illiterate adults in the world (UN DESA, 2010). Even if one does not accept the view that groups are excluded from obtaining maths knowledge because of their subordinate position in society, the accepted image in many sections of society that maths is difficult could easily lead to the idea that maths is an inappropriate choice leading to greater anxiety.

Equity issues have now been recognised as having an impact on ideas of equal access for marginal groups, as well as for women. As a consequence, teachers and curriculum developers have become aware of gender and ethnic bias in many learning materials and approaches. Courses and texts have been written to try to eradicate curriculum bias and to cater more to the needs of these groups who are now participating much more in schooling than they were in the 1960s (Ward, Lee, Baptist, & Jackson, 2010; Fensham, 1980). Participation in school higher level maths courses has tended to be male dominated and the content of courses has reflected gender-bias as they were constructed in the main by males for males (Lydeamore, 1993). Indigenous contexts were not considered at this time. Over the past two decades, equity issues have had a significant impact on curriculum development as State and Federal governments, as well as systems of education, have focused on social justice and equity issues. The enactment of sex discrimination and equal opportunity legislation (Sex Discrimination Act, 1984; Equal

Opportunity Act, 1984, 1988, 1992) have led to the development of systemic educational policies in an attempt to procure equality of participation and outcomes for all students. For example, the 1984 Report of the Commonwealth Schools Commission Working Party on the Education of Girls: *Girls and Tomorrow: The Challenge for Schools* recommended a national policy on the education of girls and, as a result, the National Policy for the Education of Girls in Australian Schools was developed (Lydeamore, 1993). This policy was implemented in every State and Territory and was monitored by a system of annual reporting. This was particularly significant as it was the first time that a national educational policy was implanted in Australia (Lydeamore, 1993).

More recently, equity issues in relation to Indigenous content have come to the fore since the early 1980s. The National Aboriginal and Torres Strait Islander Education Policy (1989) was the first Commonwealth Government Policy to include positions on programs and curricula in addition to issues of access, participation and equality of outcomes. In the 2000s, Aboriginal numeracy and literacy outcomes became a policy focus and the need for culturally inclusive curriculum was recognised (AITSL, 2013). The Australian Institute for Teaching and School Leadership (AITSL) came into being in January 2010 to provide national leadership for the teaching profession and school leadership for Commonwealth, State and Territory governments. One of the responsibilities of AITSL was the development of rigorous professional standards for teaching and to develop a national approach to the accreditation of pre-service teachers (AITSL, 2013). Two of the Focus Areas of the Australian Professional Standards for Teachers at the Graduate career stage focus on strategies for teaching Indigenous students and understanding and respect of Indigenous people to promote reconciliation. An important aspect of these foci is knowledge and understanding of culture on the education of Indigenous students and respect for these.

These equity issues are coming from a wide range of educationalists and are important for having general educational discussions about the direction of schooling, as well as for some of the pedagogical changes that they have spored. The authors would go further and extend the possible impact of all these general issues directly to maths education issues as this is a key area that society focusses upon. Whilst literacy and numeracy are often mentioned together, it is still the numeracy issues that cause the more vocal reaction. Many of the problems encountered seem to be related to confidence and expectations rather than to the individual's actual content

knowledge or skill level in processing maths. Equity issues in particular have seemed to be a driving force for change. If the end result of the changes introduced was to be a reduction in the number of maths challenged students, then it has not had the desired effect.

Maths Anxiety in Teachers

In their recent conference publication, Flegg et al (2013) indicated that maths anxiety in teachers remained at high levels and could be directly related to gender, as a higher proportion of female teachers seemed to suffer from it more than male teachers. As most primary teachers are women, this has the potential to make it a major and possibly critical issue within their schools and for education systems in general and reinforces the long-term effects on society if any key grouping of pre-service teachers is maths challenged. Maths attitudes in children are especially influenced by both parents and teachers (Flegg, 2007; Gunderson, Ramirez, Levine, & Beilock, 2011). Whilst parental attitudes are likely to take more time to change as there is no real mechanism to affect this in the general population, Universities have a responsibility to at least attempt to address the issues in their pre-service teachers. It could then be expected over time to have a positive effect within schools as a greater proportion of new teachers would be less maths challenged. In addition, the discussions that need to take place within Universities should reinforce with their students both the necessity of seeking help and the wide provision of help available. As mentioned earlier, for minorities there are additional barriers to progress that they need to overcome and these need to be recognized and taken into account in the provision of programs offered in order to facilitate the breakdown of some of these barriers.

A number of studies have looked for reliable predictors of high maths anxiety levels, but there has been no agreement as the summary Flegg et al (2013) carried out indicated. Whilst it is assumed that marginalised groups will have higher levels of maths challenge, it was difficult to differentiate causes of anxiety and/or maths challenge and hence decisive data was unlikely to be achieved. In the reported studies, some linked higher levels of anxiety to age and gender, whilst others studies didn't, despite the overall view that it seemed to be more prevalent in female teachers. There were some indications it could be linked to previous experience, but this wouldn't work for younger children who would lack that experience. The only item that did seem clear-cut was that primary pre-service teachers tended to have a higher prevalence than the

general population at University. As women as a group seem to have a higher proportion who experience maths challenges and the great majority of primary pre-service teachers are women, this research direction seems to have reached an impasse. Hence, whilst a generalized trend can be seen, it is proposed that a much more individualized approach may be necessary.

Published information on specific retention rates of pre-service students who are maths challenged seems to be non-existent. The use of the body of information collected on students by Universities during their general business has not until recently been interlinked, and hence accessible to researchers in a useful way, and the ethical issues with using this data has in most cases not yet been resolved; hence the use of analytics is in its infancy and not yet available to the writers. There have been a number of attempts to find more general ways to improve retention rates in the profession, such as the suggestion of Thornton, Peltier, & Hill (2005) to improve screening procedures for entry to the programs as they found that 50% of new teachers left the profession within five years of their first job. Their article concentrated on personality preference profiles. Again, there is no information available on how this related to their level of maths challenge whilst at university. Others have tried to review published literature using recruitment and retention statistics in order to try to give an up-to-date picture of which organisations were more successful (Guarino, Santibanez, & Daley, 2006); these of a necessity tend to be country specific and quickly out of date as educational structures and priorities are currently in such a state of flux. Teacher efficacy seems to have been a more promising area to investigate, as the surveys by Bursal & Paznokas (2006) and Swars et al (2006) directly link high maths anxiety to lowered mathematics teaching self-efficacy. Flegg et al (2013) reported on a number of reviews which indicate that high self-efficacy leads to better teaching innovation, job satisfaction and hence retention rates for teachers. This clearly puts the spotlight back squarely on University pre-service programs as it is at this stage that something can be done to provide students with higher levels of self-efficacy, especially if their ability to teach maths effectively is part of the problem students are facing

Current Results

Before discussing results from the previous and current surveys, it is interesting to pick out one student from the current USQ pre-service teacher group whose experience emphasises the

difficulties inherent in trying to rectify the maths anxiety issues documented within the population at large, with primary pre-service teachers particularly at risk. Clearly, the student knew about her maths difficulties but could not sort out her home life/study time balance in any effective way. In addition, having signed up as an on campus student for the personal touch, she reverted to the on line mode for convenience despite it not being effective enough for her.

From the initial current survey results, Flegg picked out a student who had registered a very low score on the self-marked, optional (but encouraged) on-line maths test and who also had indicated that they had sought no help with their 'recognised' maths problem. The student responded to Flegg's email which pointed out the inconsistency and offered assistance:

I have had some difficulties and yes the current topic algebra is even harder. I have been having difficulties deciding what to do about today's lecture, as I normally watch on line as the lecture is at a bad time for me as I have the girls to pick up from school who have ballet but I know I am struggling especially with the exam looming. What is the best way of contacting you?

Having responded with a possible time, the next comment was:

Sorry I missed this earlier, I am having big troubles with emails, data, etc. and I did not check these emails. I attended the on campus lecture today, my first. I have been missing quite a few tutorials as I was getting some on call work which clashed. I have not seen my tutor much and really I have been treading water rather than trying to get help.

Her comments about 'the best way' and 'didn't check emails' reflect poorly too on her interaction with the course documentation which covers these precise issues. For this student, it was clearly being her own worst enemy that exacerbated her problems and she then amplified them by failing to take any action on her maths challenges until individually prompted, despite recognising that she wasn't doing well. This student demonstrates why intervention needs to be individualised, as the authors proposed earlier.

In comparison, Uusimaki and Kidman (2004) found in their constructed study that, even for students with high enough levels of maths skill, it is the fear and worry of failure that most affected their performance levels. Their study used students selected from a pool of volunteers and hence was working with motivated students. Their cohort was not a random study, but one where they were confirming a particular characteristic – a constructed study. In our case, we had to find the students ourselves from those who answered our survey. That a reasonable cross-section of students did access the test opportunity was clear from the range of responses that were found. What can we do about the majority of students on the course who chose not to answer the survey at all is a question with no agreed answer, especially as anecdotally Flegg was

informed on a number of occasions by other students that the students who they knew had maths challenges deliberately didn't do the test so that they wouldn't have confirmation of their problem.

The initial study by Flegg (2007) surveyed the teachers of the 17 primary classes that he was investigating to ask about their history and attitudes to maths and how this related to their class teaching. He found that all of his respondents who disliked teaching maths were women and this correlated with having maths difficulties when they were at school themselves. The assumption was that they disliked it due to their own on-going problems as there was no indication that they were poor practitioners; their students had responded that their teachers loved teaching maths, so they were clearly great actors at least. This reinforced that women seemed to be more at risk and that the problems stemmed from childhood experiences. Both of these results reinforce the necessity of catching those with maths challenges at an earlier stage, namely when they are still pre-service teachers.

The current survey of pre-service primary teachers whilst they were enrolled in their first maths pedagogy course has been carried out over two semesters. The first semester's 96 students from the 491 enrolled on-campus and on-line (approx. 20%) found that over 90% of the respondents were female compared to the local on campus cohort of 85% female; this indicated a slight bias towards women taking the time to answer the questionnaire. Over 70% were taking the course six or more years (6+) after leaving school, with over 50% aged 31 or more, mainly in an on campus mode and nearly half the first in their family to attend University. Almost all of those with poor maths test scores were in this 6+ group and with the majority of these the first in their family. Of the larger group with poor scores that had signalled that they had some problems, half had sought no help. This reinforces that the sample student probably was not on her own in needing individual, targeted offers of help. The second semester's results had 29 students from a solely on-line cohort of 98 (approx. 30%) responding, who showed a similar pattern of responses and from which the remaining vignettes were taken. Although this was data reflecting only some of the two cohorts, the results tied in well with other available information from the literature and anecdotally from both authors.

Looking specifically at targeted minorities was found to be difficult. Only one Aboriginal & Torres Strait Islander person filled in the questionnaire and they took the opportunity to remain

anonymous by not filling in their name; they had reported no difficulties and had achieved well on the test. We were not allowed by the University to ask questions about economic status and hence looking at low SES students was not possible. We reinforced the previous perception that women as a group were more at risk, but without further investigation could not tease out what relationship being the first in the family to go to University itself might have. We did show in our sample that the over 30s who were first in their family were prominent in the group of those with problems that hadn't sought help.

Four students who scored poorly on the maths test and indicated in their comments that they had anxiety about maths were followed up and their comments are given here.

The first stated that "Maths is not a strong subject for me" and wrote in response to general follow-up questions tailored to her response:

My mother and both my older brothers were/are good at maths and love it. They tried to tutor me to no avail I just felt I can't do it and there was no point in trying. I know in reflection with everything I have learned over the last couple of years, I was rushed through to the symbolic stage and didn't understand the concept, a number of concepts. This is not the teacher I will be! My mother still tells me to this day, I am 54, I am no good at maths.

To prepare for the exam I have studied hard, worked on maths workbooks (from the USQ web site), worked through the revision lecture and tutorial. I need to get at least a pass mark because in spite of my enthusiasm with my ePortfolio pages I have failed to get my message across. Very frustrating and disappointing, I have scored between the three of them a little over 50%. So moving on, I will do my very best to pass this exam, if you have any suggestions I would welcome them.

Clearly she is indicating that, despite being a mature aged student, family preconceptions still are playing a role. She realises that she missed the conceptual stages herself as a child, but is also indicating that these have not been sorted out.

The second responded:

Have always had a problem with maths since very young. Needed to repeat Grade 1 (was a December birthday), but got pushed on and didn't understand underlying concepts. Ended up repeating Grade 6. Got tutored by the principal in remedial maths during primary school through to Grade 5 which helped and made good progress. However family then moved interstate from SA to QLD and then had no support. Had a male maths teacher who made fun of you if you asked questions, so did not and friends did not seek help in class. First in family to go to uni but this was not a problem. Mother was good at maths and encouraged and taught at home. However, couldn't help when got to high school.

Currently work full time and have children so hard to juggle study and other commitments. Daughter also has maths anxiety, but have two sons who do not. Daughter experienced similar trouble with maths teacher and father had to go up to school to sort out. The little self-paced videos were most helpful and did a lot of internet research on changing bases. Get concepts now and use hands on teaching already, was never taught like this before myself. Also did the tests on StudyDesk and found the textbook helpful. Think being able to study on-campus would have been better but put most things on hold for 3 months to be able to focus and get through the course. Find many of my friends had similar experiences and concerns, think it is common in age group of older women.

She anecdotally reinforces the authors perceptions that many women especially are maths challenged for a number of reasons and that the current change to teaching maths as a language to reinforce basic concepts has helped her already.

The responses from the final two students followed up are summarised here. The first said that the course content and forum responses were enough to increase her skills to the level required, being first in her family wasn't an issue as she had lots of support and she has enjoyed the course content. The other initially deferred studies due to work and family commitments, but restarted after a move. She complains about time pressures still, mainly from family as she is no longer working in a management position, and does the minimum that she can to complete the course.

Conclusion – Where to next?

A key focus of the interviews with these students who had indicated that they were maths challenged has been to determine what were the underlying causes of their maths challenge, particularly where individuals belong to more than one marginal grouping. In this population,

these students were all females who are first in their family to attend university. The vignettes clearly demonstrate the individualised nature of the feedback, but general areas that stand out are disorganisation, lack of time to participate fully and lack of maths background. Further investigation is needed in order to resolve how being the first in the family to attend university, a supposedly key marginal identifier, relates to other data. It is also clear that trying to work with the data quantitatively is unlikely to provide the individualised information that seems to be required.

This on-going study is being run with each semester's cohort, but the timings will be brought forward to enable interventions earlier in the semester; this should promote a more positive impact on current course progression. Also, ways of encouraging a greater percentage of students to respond to the survey will be investigated. The intent of the authors is then to link this to retention of these students by following the progress of identified individuals. In addition, to provide a broader analysis of trends, permission will be sought to review historic analytics data already held within university administration systems once the computer systems are in place to link the various depositories.

The vignettes highlight the challenges facing pre-service teachers in coming to terms with the maths challenges that they face. Our own university has many student support mechanisms in place and our course StudyDesk has links to both these and additional resources to help students by providing content specific self-help on-line programs. The pedagogy is being covered in the course itself, but the basic content is necessarily assumed. It is clear that an individualised approach is necessary if we are to help all those in need. The challenge for all universities is to be able to identify the students in need, especially if some don't wish to be found.

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