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RESEARCH ONLINE

The Potential To Learn: Pre-Service Teachers' Proposed Use Of Instructional Strategies For Students With A Learning Disability

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ABSTRACT

Over recent years, moves toward the inclusion of students with special needs in mainstream classrooms has brought about increasing attention to the way general education teachers perceive these students. Commensurate with this has been a growing interest in what may constitute educational success for children with special needs in mainstream classrooms, plus the ability of general education teachers to provide effective and appropriate instruction for them. It is known that teachers form beliefs about the process of teaching during their pre-service training and also that once a belief has been held for a long time, it becomes extremely difficult to change (Bandura, 1977, and Liljedahl, 2005). With learning disabilities being one of the most common disabilities in the classroom (Clark, 1997, and Clark & Artiles, 2000), it was considered that the need to further explore pre-service teachers' perceived use of instructional strategies in relation to students who have what is termed learning disabilities, is indeed critical. This study looked at the instructional strategies Australian pre-service teachers reported they would use for students with a learning disability compared to students without a learning disability. The findings show that pre-service teachers favour more direct teacher-centred instructional strategies for students with a learning disability and more learner-centred instructional strategies for students without a learning disability. The greatest discrepancy in strategy use between the two groups of students was the higher cognitive level instructional strategies within a learner-centred environment. Pre-service teachers would use these strategies more frequently with students who do not have a learning disability. Implications for future practice and recommendations for future research are presented.

Keywords: Learning Disabilities; Inclusion; Instructional Strategies; Pre-service Teachers

INTRODUCTION

Over recent years, moves toward the inclusion of students with special needs in mainstream classrooms have brought about increasing attention to the way general education teachers perceive these students. Commensurate with this has been a growing interest in what may constitute educational success for children with special educational needs in mainstream classrooms, as well as in the ability of general education teachers to provide effective and appropriate instruction for them. Currently these mainstream, inclusive classrooms also suffer from limitations in funding and the provision of ongoing material resources and support, further adding to the difficulties faced by general education teachers. Students with learning disabilities (LD) form the largest group of students with special educational needs in inclusive classrooms (Clark, 1997; Clark & Artiles, 2000). Educators' beliefs about students with LD influence such students' actions and academic achievement. Consequently, the relationship between the educators' understanding and perceptions of students with LD, and their subsequent treatment of them, is important. It is known that teachers form beliefs about the process of teaching during their pre-service training and also that once a belief has been held for a long time, it becomes extremely

difficult to change (Bandura, 1977; Liljedahl, 2005). Upon this basis, it could be argued that the phase of pre-service training is a critical period during which time beliefs about teaching are more likely to be influenced by external sources and that therefore, teacher training programs may indeed have a role to play. Taken together, these issues foreground a need to explore pre-service teachers' predicted use of instructional strategies in relation to students who have what is termed learning disabilities (LD). Although in Australia the term 'learning difficulty' is often used, for the purpose of this paper, learning disability (LD) will be used referring to the North American definition that LD is a neurological disorder that is manifested by "significant difficulties in acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical skills…intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur the life span" (NJCD, 1998, p. 1)

LITERATURE REVIEW

As inclusive education continues to gain strength and momentum for students with diverse needs and abilities, it is essential to understand the instructional strategies that teachers would use within the classroom. There is some controversy over which instructional strategies are most effective for students with LD, however, this issue is not specifically within the scope of this paper. Nevertheless, this study did focus on the comparison of instructional strategies used for students with and without LD.

Instructional Strategies for Students with Learning Disabilities

Over recent years, many teacher training institutions and researchers have favoured learner-centred (student-centred) approaches rather than teacher-centred (direct teaching) approaches (Gerges, 2001). This could be for a number of reasons, such as: the growing number of diverse students in a classroom (Brown, 2003); the belief it is no longer sufficient for teachers to teach content alone (Ellis, 2005); learner-centred approaches are more effective than teacher-centred approaches (Almasi & Gambrell, 1994; Couzijn & Rijlaarsdam, 1996; Garcia-Sanchez & Fidalgo-Redondo, 2006; Sawyer, Graham & Harris, 1992); learner-centred approaches focus on students' experiences, perspectives, backgrounds, talents, interests, capacities, and needs (McCombs & Whistler, 1997); students need to learn how to learn and perform using strategies (Deshler & Lenz, 1989); and students achieve desired educational standards at higher levels and are more likely to develop to their full potential (McCombs & Whistler, 1997).

However, many practitioners may still view teacher-centred approaches as the most appropriate for some students, especially for those with LD (Carnine, Silbert, Kame'enui, & Tarver, 2004; Ellis, 2005; Swanson, 1999). It is often assumed that mastery of basic skills is a prerequisite to acquisition of higher cognitive thinking skills (Ellis, 2002) and that remediation of basic skills should have a higher priority than instruction in thinking skills (Schlichter & Brown, 1985). For example, these strategies may include individual instruction, teacher-led discussions, and modelling. Maccini and Gagnon (2006) stated that instructional practices common in special education classrooms focus narrowly on computational tasks rather than higher order problem-solving activities.

Higher Cognitive Thinking Approaches

Conversely, some researchers not only favour teaching in a learner-centred environment, but many specifically favour teaching individual higher cognitive thinking approaches through a learner-centred environment (Davies, 2004). Higher cognitive thinking approaches have been defined as strategies that challenge "the student to interpret, analyse or manipulate information, because a question to be answered, or a problem to be solved cannot be resolved through the routine application of previously learned knowledge" (Newman, 1990, cited in Davies, 2004, p. 4). Findings from multiple studies (e.g. Bogner, Raphael & Pressley, 2002; Dolezal, Welsh, Pressley & Vincent, 2003; Taylor, Pearson, Peterson, & Rodriguez, 2003) revealed that teachers capable of motivating and engaging students involved them in interesting, cognitively challenging tasks. Taylor and colleagues (2003) found that effective teachers included higher cognitive level questioning strategies. Moreover, these instructional strategies may include student-led discussions, higher order thinking, problem-solving, and independent projects which are used by more engaging and effective teachers (House, 2003; Seo, Brownell, Bishop, & Dingle, 2008). As Applebee and colleagues (2003) found in their study, student-led discussions resulted in larger improvements in performance and higher academic demands. Teachers who are low engaging and least effective tend to favour teacher-directed, content-driven, and teacher-led discussions according to Seo and colleagues (2008).

Researchers have been tending to favour this approach because: failing to develop students' higher cognitive thinking skills may lead to significant learning difficulties, even in primary years (Resnik, 1987, cited in Davies, 2004); students have the skills to persist more often at difficult or uninteresting academic tasks (Pintrich & De Groot, 1990); higher cognitive thinking approaches positively relate to self-efficacy (Bandura & Schunk, 1981; Pintrich & De Groot, 1990; Schunk, 1985); they also relate to increased classroom performances (Schunk, 1985); and, they foster understanding as opposed to factor memorisation (Perkins, 1994).

Higher Cognitive Thinking and Learning Disabilities

Learner-centred higher cognitive thinking approaches have also been favoured by some for students with LD because: rather than students with LD experiencing learning as assimilation of knowledge to be accomplished through routine activities, they would understand the need for ongoing solution monitoring (Bryson, 1993); students with LD respond enthusiastically to the approach (Graham & Harris, 1989); students with LD who are taught strategies for planning and revising texts, along with procedures for regulating the strategies improve in the quality and quantity of their writing (De La Paz, 2001; Guzel-Ozmen, 2006); independent writing and higher order writing have a positive impact for students with LD (Guzel-Ozmen, 2006); and, once students with LD have received these skills, they become privy to the best-kept secrets about how to achieve academic success, and they consequently use these skills in many contexts (Deshler, 2003; Gersten, 1998; Lerner & Kline, 2006; Mainzer, Deshler, Coleman, Kozleski & Rodriguez-Walling, 2003; Swanson, 1999). Furthermore, learner-centred approaches can become important means of enhancing student ownership and result in the opportunity for enhanced self-determination and greater student control (Wehmeyer, Hughes, Agron, Garner, & Yeager, 2003). Wehmeyer and colleagues (2003) conducted a study of teachers of students with a disability in the US and found that teachers were less likely to implement student-centred learning strategies as they believed that the students would not benefit due to not being able to acquire and implement such skills. However, their results show that students could implement self-regulating strategies and reduced the intensity of supports needed by students. Gersten and colleagues (2006) found that students with LD can learn complex grade-level material when provided with leaner-centred instruction that supports active involvement in the learning process.

Nevertheless students with LD often get a "watered down curriculum and low expectations by teachers" (Ellis, 2002, p. 2), and do not learn the necessary skills, thus rely on support. As Deshler and Lenz (1989) argue, the support students with LD receive, keeps them afloat in the content curriculum. However, they are not prepared to independently meet demands outside of the support system in the world of adulthood. Gerges (2001) found that the pre-service teachers in the study, when on practicum experiences, abandoned learner-centred approaches for more teacher-centred approaches in order to gain control of the classrooms and ensure appropriate behaviour and learning. Gerges (2001) also concluded that in order to ensure high success rates for low-achieving students, the pre-service teachers implemented direct instruction rather than promoted higher cognitive thinking approaches.

This study, therefore, governed by prior research, examined a multitude of instructional strategies. Furthermore, it also particularly focused upon the higher cognitive level instructional strategies within a learner-centred environment. It does not particularly imply that these strategies are of the greatest significance for students with LD. Nevertheless, the research indicates that they can significantly improve students' academic achievements if addressed appropriately. This can seem to be especially the case for students with LD.

METHOD

Students with LD are unique with regard to ability level, self-control level, area of severity, and other relevant factors. Thus, the research study was conducted to ascertain whether the instructional strategies pre-service teachers might use, share this uniqueness or are stereotypical in regard to labelling students with LD. Thus it is expected that this study will have implications for the ways in which teachers are trained to respond to and meet the needs of students with LD. The underlying question that this study aimed to answer was 'what intended instructional strategies do pre-service teachers use for students with and without LD?'

The pre-service primary school teachers in this study were drawn from four University campuses across New South Wales. The pre-service teachers were undertaking a Bachelor of Education (Primary) degree which

prepares graduates to teach children from Kindergarten to Year 6, ranging in age from five to 12. Alongside their university studies, pre-service teachers are expected to successfully complete teaching placements or practicums. In their first year they spend several weeks in the classroom, with a focus mainly on observing how schools and classrooms function. In their second year, they are expected, in the first instance, to team teach, but then provide individual whole lessons. The third year practicum involves individual whole unit teaching while in the final fourth year practicum, student teachers are expected to complete a full term (ten week) internship, in which they run a class independently. Participants included 444 pre-service primary school teachers enrolled in a four year teacher-training program at four university campuses across New South Wales, 19% of whom were male and 81% female, a similar ratio of male and female primary teachers in Australia (Callan, 2004). Participants included pre-service teachers in their final year of the primary teaching course.

The instrument used to collect the data derived from theory and from previous empirical research instruments. The instrument comprised a variety of instructional strategies pre-service teachers reported they would use for students with and without LD. The Instructional Strategies Questionnaire (ISQ) was derived from two previous instruments: the Survey of Practices (SOP) developed by the NRCGT (Tomlinson et al., 1995); and, the Differentiated Practices Survey (DPS) developed by Hootstein (1998). The ISQ was created to elicit which instructional strategies pre-service teachers would most likely use for students with and without LD, and how frequently they were likely to use them.

The ISQ included twenty Likert scale instructional strategies for students with and without LD, and respondents were asked to rate the frequency they would use each instructional strategy for each type of student. The Likert scale included five points ranging from 5 (very frequently) through to 1 (never). Thus the higher the respondents' score, the more frequently they would use the instructional strategies with average students and/or students with LD.

Prior to administering the instrument on the sample, it was necessary to administer the instrument to a pilot group. The sample size for this pilot study was 40 pre-service teachers who were not to be included in the final research sample. During the pilot study, participants were asked to comment on the clarity of the instrument, and any changes that they would make. They were also invited to include any thoughts or ideas that they believed were helpful. The instrument was revised in response to the participants' comments.

The previous studies in which the ISQ was formed (SOP created by NRCGT [Tomlinson et al.], 1995; DPS created by Hootstein, 1999) were created to analyse the instructional strategies individually by looking at either strategies in comparison to one another (Hootstein, 1999), or strategies in comparison to different types of students (NRCGT [Tomlinson et al.], 1995). The current study included twenty varied instructional strategies across two different groups of students (LD and NLD students). The investigators sought to explore which instructional strategies pre-service teachers would use, for students with and without LD, and how frequently they believed that they would use the strategies.

As well as analysing the instructional strategies individually, the researchers also carried out a factor analysis to determine a 'higher cognitive level instructional strategies' variable. After carrying out a factor analysis, of the twenty instructional strategies, two of the subscales created identified two clear factor loadings of groups of instructional strategies. One of the independent dimensions that the factor analysis created was what the investigators termed, 'LD higher cognitive level instructional strategies'. This dimension included five distinctly higher cognitive level learner-centred instructional strategies used specifically for students with LD. The five instructional strategies that the factor analysis identified included: higher-level thinking, independent study, problem-solving, student-led discussions, and independent projects. Conversely, the second independent dimension that the factor analysis created was, what the investigators termed 'NLD higher cognitive level instructional strategies'. This dimension included the same five higher cognitive level learner-centred instructional strategies as the previous dimension had found, but for NLD students. Thus, the two factors were concomitant with one another. A reliability test for the instrument resulted in the alpha coefficients of reliability being .77 (5 items) for the subscale 'NLD higher cognitive level instructional strategies' and .71 (5 items) for the subscale 'LD higher cognitive level instructional strategies'.

A paired sample t-test approach was used to compare instructional strategies that pre-service teachers would use for students with LD to students without LD. This was to examine whether any significant differences exist and their magnitude. Each LD instructional strategy was paired with its NLD instructional strategy counterpart. Thus, there were twenty pairs of instructional strategies that were tested for possible significant differences with appropriate procedures to avoid type I error.

RESULTS

Means and standard deviations for instructional strategies that pre-service teachers intend to use for students with and students without LD are presented in the following tables. A paired sample t-test was carried out to examine if there were any significant differences between the higher cognitive level instructional strategies (subscale) and individual instructional strategies used for students with and without LD.

Differences amongst the Higher Cognitive Level Instructional Strategies

As Table 1 shows, there was a significant difference between the higher cognitive level strategies used for students without LD compared to students with LD. This group of strategies was reported to be used far more frequently for students without LD than students with LD (M_1 - M_2 = .92, t = 23.70, p< .001). Although it could be argued that this group of strategies can be just as important for students with LD as it is for students without LD (Bender, 2002; Butler, 1995; De La Paz, 2001; Guzel-Ozmen, 2006; Lerner & Kline, 2006; Reid & Lienemann, 2006; Swanson, 2001; Ysseldyke & Algozzine, 2006), these strategies were not reported as frequently by pre-service teachers for students with LD.

Table 1: Comparison of Frequency Rates for Proposed Use of Higher Cognitive Level Instructional Strategies for Students with and without LD

	M	SD	t	Sig.
NLD Instructions	3.98	.62		
LD Instructions	3.06	.66	23.70	.000*

* = Significant at the .05 level

Individual Instructional Strategies used with the Greatest of Differences

Of the original twenty instructional strategies, there were significant differences for sixteen strategies that pre-service teachers would use for students with and without LD. The most significant differences were the higher cognitive level instructional strategies (that formed, through factor analysis, the variable 'higher cognitive level instructional strategies'). All of these strategies were reported as likely to be used far more frequently for students without LD than students with LD.

Table 2: Strategies with the Greatest of Differences of Usage between Students with and without LD

	NLD		LD		Overall Difference	
	M	SD	M	SD	t	Sig.
Independent Study Higher Level Thinking	3.84	.87	2.69	.89	22.51	.000*
Higher-Level Thinking	4.03	.83	3.05	.97	19.59	.000*
Student Led Discussion	3.98	.87	3.14	1.020	17.29	.000*
Problem Solving	4.15	.79	3.40	.96	17.00	.000*
Independent Projects	3.91	.98	2.99	1.05	16.86	.000*

* = Significant at the p< .0025 level

As Table 2 shows, the instructional strategy with the greatest difference was 'independent study' (M_1 - M_2 = 1.15, t = 22.51, p< .001). Pre-service teachers would use independent study far more frequently with students without LD than they would with students with LD. 'Higher-level thinking' (M_1 - M_2 = .98, t = 19.59, p< .001), 'student led discussion' (M_1 - M_2 = .84, t = 17.29, p< .001), 'problem solving' (M_1 - M_2 = .75, t = 17.00, p< .001), and 'independent projects' (M_1 - M_2 = .92, t = 16.86, p< .001) are also perceived to be far more frequently used with students without LD than students with LD, even though some argue that these strategies can be just as important for students with LD as they are for other students (Bender, 2002; Butler, 1995; Davies, 2004; De La Paz, 2001; Guzel-Ozmen, 2006; Lerner & Kline, 2006; Reid & Lienemann, 2006; Swanson, 2001; Ysseldyke & Algozzine, 2006).

As well as the above five instructional strategies producing the greatest significant differences concerning frequency of use between students with and students without LD, it is also worth noting here that there are differences amongst the two groups of students on the frequency ranking of instructional strategies.

Table 3: Ranking of the Higher Cognitive Level Instructional Strategies used toward Students with and without LD

NLD Rank Order Number	Strategy	LD Rank Order Number
2	Problem Solving	12
5	Higher-Level Thinking	14
6	Student Led Discussion	13
7	Independent Projects	16
10	Independent Study	19

As Table 3 shows, the five higher cognitive level instructional strategies are ranked as five of the top ten most frequent strategies that pre-service teachers would use for students without LD. Moreover, the five higher cognitive level instructional strategies are ranked in the bottom ten most frequent strategies that they would use for students with LD. These different perceptions indicate the difference in opportunities likely to occur for students with LD in comparison to students without LD in the classroom.

Instructional Strategies used with No Differences

From the twenty instructional strategies used in this study, only four, as shown in Table 4, resulted in no significant differences in regard to the advocated frequency of use for students with and without LD.

Table 4: Strategies used with No Significant Differences of Usage between Students with and without LD

	NLD		LD		Overall Difference	
	M	SD	M	SD	t	Sig.
Variety of Materials	4.48	.76	4.45	.80	.97	.331
Tiered Assignments	3.39	1.11	3.45	1.17	-1.09	.278
Teacher Led Discussion	3.59	.96	3.65	1.04	-1.31	.189
Learning Contracts	3.51	1.09	3.43	1.17	1.41	.158

The intended use of 'variety of materials' was not only the strategy with the least significant difference (M_1 - M_2 = .03, t = .97, p = .331), it was also the most frequently perceived strategy for students with and without LD. Having 'tiered assignments' in the classroom was also similar in usage for students with and without LD (M_1 - M_2 = .06, t = -1.09, p = .278). There were no significant differences between 'teacher led discussion' for students with and without LD (M_1 - M_2 = -.06, t = -1.31, p = .189) or 'Learning contract' (M_1 - M_2 = .08, t = 1.41, p = .158).

Instructional Strategies used More Frequently with Students with LD

From the twenty instructional strategies used in this study, only three, as shown in Table 5, resulted in significant differences relating to higher perceived frequency of usage amongst students with LD than students without LD. The instructional strategy with the greatest difference was 'modelling' (M_1 - M_2 = .25, t = -6.48, p< .001). 'Modelling' was perceived to be used more frequently for students with LD than their counterparts. The other instructional strategies that were also perceived to be used more frequently for students with LD were 'individual instruction' (M_1 - M_2 = .38, t = -5.80, p< .001) and the use of 'learning centres' (M_1 - M_2 = .33, t = -5.54, p< .001).

Table 5: Strategies used More Frequently toward Students with LD in Comparison to Students without LD

	NLD		LD		Overall Difference	
	M	**SD**	**M**	**SD**	**t**	**Sig.**
Modelling	4.06	.90	4.31	.91	-6.48	.000*
Individual Instruction	3.24	.93	3.62	1.15	-5.80	.000*
Learning Centres	3.42	1.04	3.75	.97	-5.54	.000*

* = Significant at the < .0025 level

DISCUSSION

This study aimed to explore and deepen the understanding of the intended use of instructional strategies by pre-service teachers for students with and without LD. The results from this study show that there were significant differences between the instructional strategies selected for students with and without LD. The higher cognitive level instructional strategies were reported more frequently for students without LD than they were for students with LD. This provides students with LD less opportunity to use, and learn how to use, independent, higher cognitive learning strategies. The instructional strategies intended to be used most frequently for students with LD were more teacher-centred approaches, modelling and individual instruction. Thus, pre-service teachers reported they would use higher cognitive level instructional strategies within a learner-centred environment far more frequently for students without LD. Concomitantly, pre-service teachers reported they would use more direct teacher-centred instructional strategies for students with LD.

According to the research discussed earlier, this can at times contradict the instructional strategies recommended for students with LD. According to Davies (2004) and Ellis (2002), this may result in a watered-down curriculum for students with LD.

The results showed that pre-service teachers would use different instructional strategies at different frequencies for students with LD compared to students without LD. Overall, for students without LD, all of the learner-centred instructional strategies were in the top half (ten) of the most frequent instructional strategies that pre-service teachers would use. For students with LD, on the other hand, only three of the learner-centred instructional strategies were in the top half (ten) of the most frequent instructional strategies, and none of the higher cognitive level instructional strategies were in the top half. Thus, pre-service teachers generally favoured teacher-centred instructional strategies for students with LD, and learner-centred strategies (particularly those of a higher cognitive level) for students without LD.

All of the learner-centred instructional strategies were selected more frequently for students without LD than students with LD. The instructional strategies with the greatest differences in proposed usage for students with and without LD were all of the higher cognitive level instructional strategies within a learner-centred environment. These would be used far more frequently for students without LD. The only instructional strategies that pre-service teachers would use more frequently for students with LD were direct teacher-centred strategies (individual instruction and modelling) and learning centres.

Thus, the findings from this study support the findings from previous research. Australian pre-service teachers tend to favour the use of learner-centred (student-centred) approaches (Gerges, 2001) and in particular higher cognitive level instructional strategies (Davies, 2004) for students without LD. However, in regard to students with LD, they tended to favour more direct teacher-centred instructional strategies (Ellis, 2005). These findings also relate to Gerges' (2001) study, which found that pre-service teachers favoured direct teacher-centred approaches for low-achieving students and in order to gain control of their classroom.

LIMITATIONS OF THE STUDY

Before examining the implications of these findings for practice and future research, and considering ways in which the findings of this study might be extended, there is value in considering the limitations of the current research.

As the data were collected from the various campuses at the end of a pre-service teacher lecture, the response rate was high. Nevertheless, only those who were in attendance at the lecture had the opportunity to complete the survey instrument. Thus, a small minority of pre-service teachers across the campuses who did not attend the lecture did not complete the survey. This may or may not have influenced the findings of the current study.

With cognisance of these concerns, the discussion now turns to the implications of the findings of the study for the professional preparation of teachers, and for further research, where the issues raised by the present study might be examined.

IMPLICATIONS FOR PRACTICE

These findings have practical implications for pre-service teacher education. These not only reflect the theoretical implications but the broader translation of these implications into classroom practice and the academic arena.

Pre-service teachers are more likely to use direct teacher-centred, and fewer higher cognitive level instructional strategies for those with LD, in comparison to others. One step toward redressing this situation is for tertiary institutions to better prepare future teachers with the skills, perceptions and knowledge to enable and teach students with LD.

Tertiary institutions need a greater focus on instructional strategies and differentiating the curriculum for diverse learners in an inclusive classroom, particularly considering students with LD. For example, practicum considerations could be modified so that the emphasis of lesson evaluations provided by the cooperating teacher and university liaison officer also identifies the pre-service teacher's endeavour and effort at attempting more complex learner-centred instructional strategies, rather than on their overall seeming success or failure at implementation. This coupled with greater understanding and perceptions of students with LD, would better prepare future teachers.

The findings from this study reveal an obvious lack of information in relation to teacher training about LD in tertiary institutions, including accommodations that can be recommended for those with LD. However, the recommendations discussed here in regard to changes necessary in the tertiary institutions are only part of the solution as the problem about perceptions, understandings and expectations of those with LD is larger. As tertiary institutions are governed by the states' Department of Education and Training, changes need to be made by policy makers and those within the DET across the states.

IMPLICATIONS FOR FUTURE RESEARCH

The present study investigated the instructional strategies pre-service teachers reported they would implement in the classroom for students with and without LD. However, it was not possible to further explore the scope and effectiveness of implementation. Consequently, additional research on strategies that are being used for students with LD compared to their peers would indeed be useful. Furthermore, future studies should also look at

those strategies that pre-service teachers report they would use in the classroom on practicum, and which strategies they do/are able to use within the classroom on practicum. These responses may differ, as pre-service teachers believe they would use certain strategies having not yet tried them, but in reality may not have the skills/knowledge to apply them. Pre-service teachers' supervising teachers are influential here and may advise against, or even forbid the use of some strategies within their classroom.

Moreover, throughout all of the proposed recommendations for future research mentioned above, these suggestions should focus on not only pre-service teachers.

Future research of a longitudinal nature, focusing on newly qualified teachers and practising teachers (primary, secondary, and vocational education and training settings) as they move through their teaching careers, would be useful. This would enable a closer look at the process of professional socialisation generally and also, in relation to special educational needs issues.

Future research studies discussed here could also be carried out cross-nationally to provide comparative data. Given the present government's intention to establish educational consistency at a national level, such a study would be timely.

CONCLUSION

The greatest difficulties for professionals have been in the search for how best to understand students with LD within the education system, to meet their needs, and to teach them the necessary skills for adulthood. This study has removed some of the layers of complexity that have surrounded the issues of LD as well as the processes of teaching and learning. It is hoped that this knowledge will lead further research toward unfolding the many learning disability quandaries that still exist.

This study has shown that pre-service teachers within Australia perceive students with LD as less sophisticated and as incapable of engaging in higher cognitive level instructional strategies. Thus the pre-service teachers are likely to provide minimal opportunities for these students to practice them. Denying students with LD opportunities to engage in higher cognitive level instructional strategies can, according to Ellis (2002), severely reduce their chance of developing those thinking skills, thereby hindering their future learning potential. Students with LD receive more direct teacher-centred instructional strategies and less learner-centred higher cognitive level instructional strategies than students without LD. This, Ellis (2002) argues, results in a watering down of the curriculum for students with LD.

It is essential that pre-service teachers be nurtured to fully understand students with LD and that many attributes and aptitudes of students with LD can be modified and enhanced by skilled teaching (Westwood, 2006). By providing better training of future teachers, the needs and opportunities within the academic arena of students with LD can begin to be met.

It is possible that people with LD have two forms of disability: the primary disability of the neurological disorder of LD and the secondary disability being the perceptions, understandings, expectations and treatment from society toward those with LD. It is possible that the major problem for those with LD is not necessarily within the primary disability of actually having LD, but with the secondary disability - that of social attitudes. The primary disability will never be eradicated; however, the secondary disability could - and should - change. Therefore, focused energy needs to be directed toward changing the secondary disability of LD within Australia if those with LD are going to receive a greater quality of education and opportunity.

AUTHOR INFORMATION

Dr Stuart Woodcock initially trained as a teacher in England. Since then he has taught in England, Canada and Australia in primary and secondary schools, teaching in a variety of settings including mainstream, special education and behaviour units. He currently lectures in a range of areas, including inclusive education, classroom and behaviour management, educational psychology, and child and adolescent development, teaching at undergraduate

and postgraduate levels. His research areas focus on students with learning disabilities, teacher efficacy, classroom and behaviour management, quality teaching and instructional strategies, and bi-cultural inclusion.

Professor Wilma Vialle completed her doctorate at the University of South Florida in 1991. Her dissertation involved the application of Multiple Intelligences Theory in a study of economically disadvantaged preschoolers. Wilma's research interests focus on maximising intellectual potential and she is particularly interested in issues of social justice. Ongoing research includes an international study of effective teachers of the gifted, a longitudinal study of adolescent academic and social-emotional outcomes, the development of expertise in competitive Scrabble players, and the development of spiritual understanding in children. Wilma is a member of the Learning and the Learner Research Group at the University of Wollongong.

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