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The Effect of Accessibility Options on the
Functional Performance of Applied Computer
Skills among Visually Disabled Students

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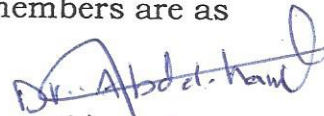
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Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Hadeel B. Halaweh

Date: 24/01/2004

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Abstract

“The effect of accessibility options on the functional performance of applied computer skills among visually- disabled students”

An experimental design was adopted to study the effects of accessibility applications on computer skills performance among persons with visual disabilities. 11 Palestinian students with visual disabilities (5 blind & 6 low vision) aged from 14-24 years were enrolled in the study, challenging their disabilities through focusing on the residual visual, hearing and tactile capacities to access standard computers that are used by their nondisabled peers.

The problem of the study is centered on the limited affordable specialized programs for visually disabled Palestinian students who can be hindered because they are unable to use standard computers in their educational and vocational life.

The importance of the study is to formulate an adaptive specialized program that meets students' needs and promotes the independence and adaptations of persons with visual disability in order to achieve the goals of rehabilitation.

A suggested program was constructed for this purpose based on careful review of Microsoft accessibility options that are available on every computer, special software or hardware are not necessarily required if there is access to Windows and Microsoft Word 2000 or the latest versions of these products Windows XP and Word 2002 .

Magnifier, Narrator, Accessibility Wizard and Utility Manager are the essence of the suggested program activities in addition to hardware, software and fine motor activities.

The sample was divided into two groups (blind) and (low vision). Subjects were submitted to pre and post measurements based on the suggested program items. A measurement tool and grading system were developed specifically for the study. Numerical and qualitative scores were recorded using a scale of 0-6. Eight weeks duration was needed for implementation.

Data analysis was conducted using SPSS package. Descriptive statistics were calculated. Independent and paired samples T –Test were used to measure the effect of the suggested

program on both groups at significant level 0.05. The results are presented through illustrated tables and graphs.

A discussion of the results was held at the sight of the study objectives, hypotheses and results and their interaction with the related information in the literature. The discussion focused on how information gathering and interpretation through cognitive processes take place among persons with visual disabilities.

The application of the suggested program led to a positive significant effect on the performance of the visually disabled based on the paired sample T- test values. Insignificant difference between the experimental groups of the study for the advantage of low vision group was recorded.

One of the sound conclusions of the study is through the applications of the suggested program; standard computers could become more accessible to the visually impaired students, and accordingly the abilities of computer skills performance among these students had significantly improved due to the application of the suggested program. The researcher concludes the suggested program has the potential to improve the abilities of visually disabled persons and to enable them to develop greater independence taking into consideration the person's current pattern of strengths and weaknesses and in sight of achieving the primary goal of rehabilitation.

Based on the results and the conclusions of the study the researcher recommends to adopt the suggested program by the institutions working with visually disabled students as an accessibility tool serving persons with visual disabilities both at educational and vocational settings.

خلاصة

"تأثير البرمجيات المحوسبة في الأداء الوظيفي لمهارات الحاسوب التطبيقية لدى الطلاب ذوي الاحتياجات البصرية الخاصة".

يتحدد موضوع هذه الدراسة في بعض الأساليب المقترحة لتفعيل استخدام برمجيات الكمبيوتر المعدلة لدى الأفراد ذوي الاحتياجات البصرية الخاصة من ضعف البصر والمكفوفين والتي من شأنها أن تسهل على هؤلاء الأفراد إمكانية استخدام مختلف البرامج المحوسبة في الحاسب التقليدي للأفراد الأسوياء.

تظهر أهمية هذه الدراسة في تفعيل وتدريب الطلاب ذوي الاحتياجات البصرية الخاصة على استخدام هذه البرمجيات التأهيلية المعدلة لاستثمارها تطبيقياً في مجال الحاسوب ومن ثم في المجال التربوي.

لدراسة تأثير هذه البرمجيات المحوسبة في الأداء الوظيفي لمهارات الحاسوب التطبيقية لدى الطلاب ذوي الاحتياجات البصرية الخاصة، فقد اعتمد المنهج التجريبي ذو الاختبارين القبلي والبعدي في عينة قوامها 11 طالبا/ة تتراوح أعمارهم ما بين 14-24 ، (6) من ضعف البصر و(5) من المكفوفين من مدرسة القبس للمكفوفين واتحاد المعاقين الفلسطينيين (رام الله).

تم إعداد برنامج مقترح لتحقيق أهداف هذه الدراسة وبما يضمن استثارة الاحتياطي الوظيفي الكامن في القدرات الوظيفية المتبقية لدى أفراد مجتمع البحث على طريق استثماره تطبيقياً في المجال التربوي التعليمي، حيث تم تطبيق البرنامج في مدة 8 أسابيع (1/نيسان-27/أيار/2003).

لجمع البيانات ذات العلاقة بموضوع الدراسة فقد تم بناء مجموعة من مفردات الاختبار التي تحاكي التقييم الموضوعي للبرمجيات الرئيسية قيد الدراسة، وقد اعتمدت الباحثة على مرجعية الدقة والسرعة في الإنجاز الوظيفي لكل من هذه المهارات كأساس تقييمي لتوثيق التحسن المرجو من تطبيق البرنامج المقترح، وعليه فقد تم بناء أداة قياس تتكون من 6 درجات لقياس كل من مكونات الدقة والسرعة للأداء الوظيفي.

وبعد تطبيق البرنامج المقترح وجمع البيانات وتحليلها، خلصت الباحثة إلى ايجابية تأثير البرنامج المقترح في الإنجاز الوظيفي لمهارات الحاسوب التطبيقية لدى ذوي الاحتياجات البصرية الخاصة من المكفوفين وضعاف البصر وعليه تم قبول الفرضية الأولى للدراسة، وحيث انه لم يشخص فرقا إحصائيا في القراءات القبليّة والبعدية للمجموعتين التجريبيتين فقد تم رفض الفرضية الثانية و القائمة على أساس تفوق مجموعة ضعاف البصر في القراءات البعدية للمتغيرات قيد الدراسة.

وقد أوصت الباحثة باعتماد البرنامج المقترح والمنهجية التي يقوم عليها كأسلوب معاصر في تدريس الطلاب ذوي الاحتياجات البصرية الخاصة من (ضعاف بصر ومكفوفين)، حيث أن سعة انتشار تلك البرمجيات وقلة تكلفتها المادية وفاعلية تأثيرها تجعل منها أسلوبا عمليا واقتصاديا في منهجية التدريس في مدارس ذوي الاحتياجات البصرية الخاصة.

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