$ VWXG\ RI DGYDQFHG DXGLWLQJ WKHRU\ SUDFWLFH DQG SUREOHPV HQFRXQWHUHG LQ WKH SUDFWLFH RI SXEOLF DF FRXQWLQJ

$ VWXG\ RI FRQWHPSRUDU\ DFFRXQWLQJ LVVXHV DQG DQ DQDO\VLV RI KRZ DFFRXQWLQJ SUDFWLFH LV LQIOXHQFHG E\ UHJXODWRU\ DJHQFLHV HFRQRPLF FRQGLWLRQV DQG SUR IHVVLRQDO DFFRXQWLQJ RUJDQL]DWLRQV

7KLV FRXUVH HPSKDVL]HV V\VWHPDWLFDOO\ GHYHORSHG FRXUVH GHVLJQ 6SHFLDO DWWHQWLRQ LV JLYHQ WR OHDUQLQJ DQG LQVWUXFWLRQDO V\VWHPV WKHRU\

$Q RYHUYLHZ RI DGXOW HGXFDWLRQ WR JLYH DQ XQGHU VWDQGLQJ RI FKDUDFWHULVWLFV RI DGXOWV DV OHDUQHUV DV ZHOO DV WKH KLVWRU\ SKLORVRSK\ DQG QDWXUH RI DGXOW HGXFDWLRQ ,QFOXGHV H[SRVXUH WR IXQGDPHQWDO DGXOW HGXFDWLRQ FRQFHSWV VXFK DV OLIHORQJ OHDUQLQJ VHOI

7KLV JUDGXDWH OHYHO DGYDQFHG VXUYH\ FRXUVH LV GH VLJQHG WR SUHSDUH VWXGHQWV WR XVH FODVVURRP DGDSWD EOH WHFKQRORJLHV (PSKDVLV LV JLYHQ WR KLVWRULFDO DQG VRFLDO FRQWH[W FRPSXWHU V\VWHPV VRIWZDUH KDUG ZDUH DQG FXUULFXOXP DGDSWDWLRQ

EH DEOH WR XVH $UF9LHZ WR YLHZ TXHU\ DQDO\]H FKDUW DQG PDS JHRJUDSKLF GDWD

[redacted]

DVSHFWV ZLWK DQ HPSKDVLV RQ WKH RSHUDWLRQDO DVSHFWV RI UHKDELOLWDWLRQ VHUYLFH GHOLYHU\ V\VWHPV

7KLV VWXG\ SURYLGHV DQ RSSRUWXQLW\ IRU WKH VWXGHQW WR SHUIRUP XQGHU VXSHUYLVLRQ D YDULHW\ RI DFWLYLWLHV WKDW D UHJXODUO\ HPSOR\HG FRXQVHORU ZRXOG SHUIRUP 3UDFWLFXP SURYLGHV IRU WKH GHYHORSPHQW RI FRXQVHOLQJ VNLOOV XQGHU VXSHUYLVLRQ 7KH VWXGHQW PXVW FRP SOHWH FORFN KRXUV LQFOXGLQJ D PLQLPXP RI KRXUV RI GLUHFW VHUYLFH ZLWK FOLHQWV ([SHULHQFHV DUH DFFRPSDQLHG E\ UHJXODUO\ VFKHGXOHG ZHHNO\ RQ

7KH FRXUVH LV GHVLJQHG WR SURYLGH WKH VWXGHQW ZLWK D FRQFHSWXDO IUDPHZRUN IRU GHDOLQJ ZLWK PDUULDJH IDPLO\ DQG VH[SUREOHPV 6WXGHQWV ZLOO EH HTXLSSHG ZLWK WKH VNLOOV QHFHVVDU\ IRU ZRUNLQJ ZLWK DOO PHP EHUV RI WKH IDPLO\

7KLV FRXUVH SURYLGHV VXSHUYLVHG VFKRRO EDVHG H[SH ULHQFH DW ERWK WKH HOHPHQWDU\ DQG VHFRQGDU\ OHYHOV 7KH VH RRO

7KH IRUPDO SURSHUWLHV RI JUDPPDUV OH[LFDO DQG V\Q WDFWLF DQDO\VLV PDFUR JHQHUDWRUV DQG FRGH VHOHFWLRQ DUH SUHVHQWHG $GGLWLRQDO WRSLFV LQFOXGH KDUGZLUH FRPSLOHUV H[WHQVLELOLW\ RI ODQJXDJHV DQG LPSOH PHQWDWLRQ RI VLPSOH FRPSLOHUV

&RQFHSWXDO DQG SUDFWLFDO IRXQGDWLRQV RI LQIRUPDWLRQ SURFHVVLQJ V\VWHPV¶ VXSSRUW IRU PDQDJHPHQW DQG GHFL[LRQ

7KH WKHRU\ DQG GHVLJQ RI PRGHOLQJ SUREOHPV YDOL GDWLRQ DQG YHULILFDWLRQ RI VLPXODWLRQ PRGHOV IRU G\QDPLF TXHXLQJ DQG VWDWLF 0RQWH &DUOR SUREOHPV DUH UHYLHZHG 'LVFUHWH HYHQW DQG FRQWLQXRXV VLPXOD WLRQ PRGHOV DUH DQDO\]HG 5DQGRP QXPEHU JHQHUD WLRQ XVHG LQ VLPXODWLRQ ODQJXDJHV DQG WKH LPSOHPHQ WDWLRQ RI PRGHOV RQ FRPSXWHU KDUGZDUH DQG VRIWZDUH HQJLQHHULQJ XVLQJ JHQHUDO SXUSRVH DQG VLPXODWLRQ ODQ JXDJHV UH SUHVHQWHG LQ WKLV FRXUVH

$ V\VWHPV DSSURDFK LV H[SORUHG DV LW UHODWHV WR XVLQJ YDULRXV DOJRULWKPV WR VROYH GLIIHUH VLQJORU

)LHOG DQG ODERUDWRU\ H[HUFLVHV LQ ODNH DQG VWUHDP VFLHQFH LQFOXGLQJ LQVWUXPHQWDWLRQ PHDVXUHPHQW VDPSOLQJ DQG DQDO\VLV &R

7KH VWXG\ RI WKH GLYHUVLW\ DQG HFRORJ\ RI PLFUREIDO SRSXODWLRQV LQ HFRV\VWHPV ZLWK WKH HPSKDVLV RQ WKH UROHV WKDW WKH\ SOD\ LQ ELRJHRFKHPLFDO F\FOHV WKHLU FRQWULEXWLRQV WR PHWDEROLF GLYHUVLW\ WKHLU LQWHUDF WLRQV ZLWK DQLPDOV DQG SODQWV WKHLU QLFKHV DQG ELRUH PHGLDWLRQ

0LFUREIDO HFRORJ\ ODERUDWRU\ WHFKQLTXHV LQFOXGLQJ LVRODWLRQ LGHQ`À V•Eˆ €0LG WDVwLVRODWJ

FKLOGUHQ SDUHQWV DQG IDPLOLHV LQ FULVLV DQG KHOSLQJ FKLOGUHQ FRSH ZLWK WKH IXWXUH

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7KLV FRXUVH LV GHVLJQHG WR H[SORUH HPHUJHQW OLWHUDF\ DQG WKH UROH RI GHYHORSPHQWDOO\ DSSURSULDWH SUDFWLFH HV IRU \RXQJ-[illegible]KLOGUHQ 1

VHPHVWHU KRXU OLPLWV OLVWHG XQGHU &RXUVH 5HVWULFWLRQV LQ *HQHUDO 5HJXODWLRQV VHFWLRQ

7KLV FRXUVH LV GHVLJQHG WR DVVLVW WKH EHJLQQLQJ JUDG XDWH VWXGHQW LQ GHWHUPLQLQJ WKH H[SHFWDWLRQV DQG DWWULEXWHV RI WKH PDVWHU WHDFKHU 0DMRU HPSKDVLV ZLOO IRFXV RQ HIIHFWLYH WHDFKHU FKDUDFWHULVWLFV VNLOOV DQG SUDFWLFHV RI WHDFKLQJ DV ZHOO DV D UHYLHZ RI WKH UHTXLUHPHQWV IRU 1DWLRQDO %RDUG IRU 3URIHVVLRQDO 7HDFKLQJ 6WDQGDUGV 1%376

7KLV FRXUVH LV GHVLJQHG WR KHOS WHDFKHUV EHFRPH OHJDOO\ OLWHUDWH E\ SURYLGLQJ WKHP ZLWK LQIRUPDWLRQ DERXW WKH ODZ WKDW DIIHFWV WKHP KRZ WKH OHJDO V\VWHP ZRUNV DQG KRZ WKDW V\VWHP FDQ ZRUN IRU WKHP

7KLV FRXUVH LV DQ LQWHU

7KLV FRXUVH SURYLGHV D GHVFULSWLRQ DQG DQDO\VLV RI WKH TXDQWLWDWLYH DQG TXDOLWDWLYH DVSHFWV RI LQWHOOL JHQFH ,W LQFOXGHV FODVVLF DQG FRQWHPSRUDU\ WKHRULHV RI OHDUQLQJ DQG WKHLU UHODWLRQVKLS WR WKH XQGHUVWDQG LQJ RI LQGLYLGXDO GLIIHUHQFHV

WLRQ GRFXPHQWDWLRQ UHODWLQJ WR VFKRRO SHUVRQQHO FUHDWLQJ VFKRRO LPSURYHPHQW SODQV ZLOO EH LQYHVWLJDWH

7KH SXUSRVH RI WKLV FRXUVH LV WR DOORZ HGXFDWLRQDO OHDGHUV WR H[SORUH WKH RUJDQL]DWLRQDO GHYHORSPHQW DQG PDLQWHQDQFH VHUYLFHV UHTXLUHG IRU HIIHFWLYH RS HUDWLRQ RI WKH VFKRROV ZLWKLQ WKH OHJDO IUDPHZRUN HVWDEOLVKHG E\ ORFDO VWDWH DQG IHGHUDO OHJLVODWLYH DQG MXGLFLDO UHTXLUHPHQWV 0DMRU HPSKDVLV ZLOO EH JLYHQ WR VWXG\LQJ OHJDO LVVXHV DQG FRPPXQLW\ UHODWLRQV /HJDO LVVXHV DQG VHUYLFHV UHODWHG WR H[FHSWLRQDO FKLO GUHQ ZLOO EH FORVHO\ H[DPLQHG 7KH GHYHORSPHQW RI HWKLFDO VWDQGDUGV LQIRUPHG OHJDO GHFLVLRQ PDNLQJ DQG HPHUJHQF\ SURFHGXUHV IRU HQVXULQJ VDIHW\ DV ZHOO DV WKH SROLWLFDO IDFWRUV ZKLFK LPSDFW VFKRROV VRFLHW\ DQG FRPPXQLW\ UHODWLRQV ZLOO EH VWXGLHG

7KH SXUSRVH RI WKLV FRXUVH LV WR DVVLVW HGXFDWLRQ VSHFLDOLVW FDQGLGDWHV DV WKH\ H[SORUH D YDULHW\ RI LQVWUXFWLRQDO PRGHOV WKURXJKRXW WKH HGXFDWLRQDO DQG RWKHU OHDUQLQJ HQYLURQPHQWV 7KHUH ZLOO EH DQ HP SKDVLV RQ FXUUHQW UHVHDUFK RI HIIHFWLYH WHDFKLQJ DQG OHDUQLQJ SUDFWLFHV 6WXGHQWV ZLOO FRPSDUH DQG FRQ WUDFW GLIIHUHQW HGXFDWLRQDO LQVWUXFWLRQDO SUDFWLFHV DQG GHYHORS VHW RI VWUDWHJLHV WR HQKDQFH WKH LQVWUXFWLRQDO HQYLURQPHQW

7KLV FRXUVH LV GHVLJQHG SULPDULO\ IRU VWXGHQWV SODQ QLQJ WR SUHSDUH D WKHVLV 3DUWLFXODU DWWHQWLRQ LV JLYHQ WR WKH UHVHDUFK WHFKQLTXHV UHODWHG WR WKH W\SHV RI WKHVLV VWXG\ WKH VWXGHQW GHVLUHV WR XQGHUWDNH 0D\ FDUU\ WKH SUHIL[DSSURSULDWH WR WKH SURJUDP RI VWXG\ L H 63(6(' ,('

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5HVHDUFK IRU DQG SUHSDUDWLRQ RI D VFKRODUO\ SDSHU UHODWHG WR D VFKRRO GGPLQLVWUDWLRQ VXSHUYLVLRQ DQG RU FXUULFXOXP SUREOHP 7KH SURMHFW ZLOO EH XQGHU WKH GLUHFWLRQ RI WKH VWXGHQW¶V DGYLVRU\ FRPPLWWHH

VSHFLDOL]HG VWXG\ PD\ EH VXEVWLWXWHG IRU D UHTXLUHG FRXUVH RQO\ RQFH LQ D VWXGHQW¶V SURJUDP 6HH VHPHV WHU KRXU OLPLWV OLVWHG XQGHU &RXUVH 5HVWULFWLRQV LQ *HQHUDO 5HJXODWLRQV VHFWLRQ

7KH SXUSRVH RI WKLV FRXUVH LV WR DVVLVW JUDGXDWH VWX GHQWV DV WKH\ FRQVWUXFW DQ RSHUDWLRQDO NQRZOHGJH RI LQWHJUDWHG WKHPDWLF FXUULFXOXP 7KH FRXUVH ZLOO IRFXV RQ WKHRU\ SODQQLQJ LPSOHPHQWDWLRQ DQG HYDO XDWLRQ RI DQ LQWHJUDWHG WKHPDWLF FXUULFXOXP $GGL WLRQDOO\ LVVXHV VXUURXQGLQJ WKH LPSOHPHQWDWLRQ RI LQQRYDWLYH WHFKQRORJLHV LQ WUDGLWLRQDO VHWWLQJV ZLOO EH H[DPLQHG

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7KH 3URIHVVLRQDO ,QWHUQVKLS 3URJUDP LV WKH FXOPLQDW LQJ FOLQLFDO ILHOG

SODQQLQJ DQG SROLF\ JURXS LGHQWLW\ PRUDOLW\ DQG UHJLRQDO VRFLDO GLDOHFWV

$ VHPLQDU VWUHVVLQJ FULWLFDO DSSURDFKHV WR WKH PDMRU ZRUNV RI VXFK ZULWHUV DV -DPHV +RZHOOV 7ZDLQ &UDQH DQG 'UHLVHU

7KH VWXG\ RI WKH FRQWHQW DQG WHFKQLTXHV RI UHSUH VHQWDWLYH QRYHOV RI WKH SHULRG ZLWK VRPH FRQVLGHUD WLRQ RI WKHVH QRYHOV LQ UHODWLRQ WR VLJQLILFDQW VRFLDO SKLORVRSKLFDO DQG OLWHUDU\ QHHGV

$ VHPLQDU VWUHVVLQJ FULWLFDO DSSURDFKHV WR WKH PDMRU ZRUNV RI (PHUVRQ 7KRUHDX +DZWKRUQH 0HOYLOOH 3RH DQG :KLWPDQ

$Q LQWURGXFWRU\ LQYHVWPHQWV FRXUVH ZKLFK LGHQWLILHV DQG DQDO\]HV YDULRXV IRUPV RI LQYHVWPHQWV VXFK DV FRUSRUDWH ERQGV FRPPRQ VWRFN SUHIHUUHG VWRFN DQG JRYHUQPHQW VHFXULWLHV VXFK DV ERQGV QRWHV DQG ELOOV 7KH FRXUVH DOVR LQFOXGHV GLVFXVVLRQ RI WKH VHFXULWLHV PDUNHW EURNHUDJH IXQFWLRQV DQG VWRFN H[FKDQJHV 3DUWLFXODU HPSKDVLV LV SODFHG RQ WKH VHOHFWLRQ RI VHFXULWLHV EDVHG RQ WKH GHJUHH RI ULVN DQG H[SHFWHG UDWH RI UHWXUQ

$Q H[DPLQDWLRQ RI WKH IRUHLJQ H[FKDQJH PDUNHW H[FKDQJH UDWH GHWHUPLQDWLRQ LQWHUQDWLRQDO ILQDQFLDO LQVWLWXWLRQV DQGUWKHPDQDJHPHQW RI WKH

PHQWDO IDFWRUV DVVRFLDWHG ZLWK WKH GLIIXVLRQ DQG LQWHQVLILFDWLRQ RI ZRUOG WUDGH DUH H[DPLQHG

$ VWXG\ RI W-[redacted] DEVROXWLVW
[redacted]

$ VWXG\ RI (XURSH IURP WKH &RQJUHVV RI 9LHQQD WR LQFOXGLQJ SROLWLFDO VRFLDO DQG HFRQRPLF GH YHORSPHQWV LQ YDULRXV FRXQWULHV WKH ULVH RI QDWLRQDO LVP DQG XQLILFDWLRQ PRYHPHQWV DQG LPSHULDOLVP

7UDFHV (XURSHDQ GHYHORSPHQWV LQ WKH LQFOXGLQJ GRPHVWLF GHYHORSPHQWV :RUOG :DU , *UHDW 'HSUHVVLRQ ULVH RI WRWDOLWDULDQLVP :RUOG :DU ,, (XURSHDQ LQWHJUDWLRQ WKH &ROG :DU DQG WKH SRVW

$ VWXG\ RI ZDU LQ 8 6 KLVWRU\ IURP WKH FRORQLDO HUD WKURXJKDð0H8

6WXG\ RI WKH RULJLQV RI WKH &LYLO 5LJKWV 0RYHPHQW LQ WKH ODWH WK FHQWXU\ EHJLQQLQJV RI FKDQJH LQ WKH V DQG WKH :RUOG :DU ,, HUD DQG WKH PRYHPHQW LWVHOI DV GHILQHG E\ OHJDO SROLWLFDO DQG VRFLDO FRQIOLFW DQG FKDQJH IURP WKH ODWWHU V WR WKH SUHVHQW

7KH GHYHORSPHQW RI WKH UHYROXWLRQDU\ PRYHPHQWV DQG WVDULVW UHIRUP DWWHPSWV :RUOG :DU , WKH UHYROX WLRQV RI DQG %ROVKHYLN YLFWRU\ HVWDEOLVKPHQW RI WKH 6WDOLQLVW VWDWH :RUOG :DU ,, WKH &ROG :DU 6RYLHW GRPHVWLF SUREOHPV DQG WKH GLVLQWHJUDWLRQ RI WKH 8665

$ VWXG\ RI $PHULFD LQ WKH \HDUV EHWZHHQ WKH HQG RI :RUOG :DU , DQG WKH HQG RI :RUOG :DU ,, 7RSLFV ZLOO LQFOXGH FXOWXUDO DQG HFRQRPLF FKDQJHV GXULQJ WKH V WKH FDXVHV DQG HIIHFWV RI WKH *UHDW 'H SUHVVLRQ WKH SURJUDPV RI WKH 1HZ 'HDO DQG WKH GLSORPDWLF FXOWXUDO DQG VRFLDO FDXVHV DQG HIIHFWV RI :RUOG :DU ,,

7KLV FRXUVH H[SORUHV WKH KLVWRU\ RI WKH &ROG :DU IRFXVLQJ RQ LWV RULJLQV WKH PDMRU HYHQWV WKH .RUHDQ :DU WKH &XEDQ 0LVVLOH &ULVLV WKH 9LHWQDP :DU WKH %HUOLQ &ULVHV DQG VR RQ DQG WKH FROODSVH RI WKH 6RYLHW 8QLRQ 7KH HPSKDVLV RI WKH FRXUVH LV SODFHG RQ DQDO\]LQJ QHZO\ DYDLODEOH SULPDU\ GRFXPHQWV IURP :HVWHUQ DQG IRUPHU FRPPXQLVW VRXUFHV DQG WKHLU LPSDFW RQ SUHYLRXV &ROG :DU KLVWRULRJUDSK\

$ VWXG\ RI VHOHFWHG HWKQLF UDFLDO FXOWXUDO VRFLDO

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ WK FHQWXU\ $PHULFDQ KLVWRU\ (PSKDVLV RQ GLVFXVVLRQ DQG VWX GHQW SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ WK FHQWXU\ $PHULFDQ KLVWRU\ (PSKDVLV RQ GLVFXVVLRQ DQG VWX GHQW SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ WK FHQWXU\ $PHULFDQ KLVWRU\ (PSKDVLV RQ GLVFXVVLRQ DQG VWX GHQW SURGXFLQJ D PDMRU UHVHDUFK SDSHU

7KH HYROXWLRQ RI)UDQFH IURP WKH IRUPDWLRQ RI WKH 7KLUG 5HSXEOLF WR WKH SUHVHQW (PSKDVLV RQ GLVFXV VLRQ DQG VWXGHQW SURGXFLQJ D PDMRU UHVHDUFK SDSHU

[redacted]

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ WK FHQWXU\ (XUR SHDQ KLVWRU\ (PSKDVLV RQ GLVFXVVLRQ DQG VWXGHQW SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ WK FHQWXU\ (XUR SHDQ KLVWRU\ (PSKDVLV RQ GLVFXVVLRQ DQG VWXGHQW SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG [redacted]VWRULRJUDSKLFDO FRQWURYHUVLHV LQ %ULWLVK KLVWRU\ [redacted]

6WXG\ DQG DQDO\VLV RI -DSDQ IURP WKH 0HLML UHIRUPV

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ JHQGHU KLVWRU\ (PSKDVLV SODFHG RQ GLVFXVVLRQ DQG VWXGHQWV SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ KRORFDXVW DQG JHQRFLGH VWXGLHV (PSKDVLV SODFHG RQ GLVFXVVLRQ DQG VWXGHQWV SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ PHGLHYDO KLVWRU\ (PSKDVLV SODFHG RQ GLVFXVVLRQ DQG VWXGHQWV SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ (XURSHDQ 5HQDLV VDQFH DQG 5HIRUPDWLRQ (PSKDVLV SODFHG RQ GLVFXVVLRQ DQG VWXGHQWV SURGXFLQJ D PDMRU UHVHDUFK SDSHU

$Q H[SORUDWLRQ RI WKH PDMRU KLVWRULFDO ZRUNV DQG KLVWRULRJUDSKLFDO FRQWURYHUVLHV LQ WKH KLVWRU\ RI (X URSHDQ DEVROXWLVP LQ WKH KLVWRU\ RI (XURSHDQ DEVR OXWLVP DQG HQOLJKWHQPHQW (PSKDVLV SODFHG RQ GLV FXVVLRQ DQG VWXGHQWV SURGXFLQJ D PDMRU UHVHDUFK SDSHU

([DPLQHV WKH UHJLRQ GXULQJ WKH ULVH RI ,VODP WKH 2WWRPDQ (PSLUH DQG LQ WKH PRGHUQ HUD 7KH FRXUVH DOVR GGUHVVHV SROLWLFDO VRFLDO FXOWXUDO DQG HFR QRPLF GHYHORSPHQWV VLQFH :RUOG :DU ,,

6WXG\ RI (DVW $VLDQ KLVWRU\ VLQFH WKH ULVH RI LPSHUL DOLVW DQG PLOLWDULVW -DSDQ LQ $VLD LQ WKH V HQ FRPSDVVLQJ FRXQWULHV OLNH &KLQD -DSDQ .RUHD DQG 9LHWQDP 7KH FRXUVH IRFXVHV SULPDULO\ RQ &KLQD DQG -DSDQ JLYHQ WKHVH FRXQWULHV¶ FXOWXUDO DQG RU SROLWLFDO GRPLQDQFH LQ WKH UHJLRQ IRU PRVW RI WKH WZHQWLHWK FHQWXU\

6WXG\ RI WK DQG WK FHQWXU\ SROLWLFDO VRFLDO DQG FXOWXUDO KLVWRU\ RI WKH UHJLRQ LQFOXGLQJ WKH SDUWLWLRQ RI $IULFD E\ (XURSHDQ SRZHUV DQG GHFRORQL]DWLRQ

6WXG\ RI WKH KLVWRU\ RI-/DWLQ $PHULFD IURP SUH

WO ÄFFOB U.\09D D"DDWWUoO $S0 0'€ 0 • @ñ H t€

SODFHG RQ GLVFXVVLRQ DQG VWXGHQWV SURGXFLQJ D PDMRU UHVHDUFK SDSHU

7KLV FRXUVH LV GHVLJQHG WR KHOS WKH VWXGHQW XQGHU VWDQG WKH ODZ DV LW DSSOLHV WR WKH PDQDJHPHQW RI KXPDQ UHVRXUFHV ,WV FRYHUDJH LV DLPHG DW SUHSDULQJ WKH PDQDJHUV RI KXPDQ UHVRXUFHV WR UHFRJQL]H OHJDO SUREOHPV WR NQRZ WKH OHJDO LPSDFW RI GHFLVLRQV RQ SHUVRQQHO PDWWHUV DQG WR EH NQRZOHGJHDEOH RI WKH ODZ DV LW PLJKW LPSDFW LQGLYLGXDOV LQ RUJDQL]DWLRQV

7KH VWXG\ RI WKH PDQDJHPHQW RI SHRSOH DW ZRUN ZLWK HPSKDVLV RQ UHFUXLWLQJ VHOHFWLQJ WUDLQLQJ DQG HYDOXDWLQJ SHUVRQQHO 7KH VWXG\ RI WKH XVH RI WHFKQRORJ\ WR VWUHDPOLQH +5 DFWLYLWL•ð0

7KLV FRXUVH H[SORUHV KRZ WR ZULWH D JUDQW DQG GLV FXVVHV DOWHUQDWLYH ZD\V RI IXQGUDLVLQJ 3DUWLFXODU DWWHQWLRQ ZLOO EH JLYHQ WR JUDQW ZULWLQJ SURWRFROV DQG SURFHGXUHV DV ZHOO DV G\QDPLFV LQYROYHG LQ UH VSRQGLQJ WR D 5HTXHVW IRU D 3URSRVDO DQG XQGHU

SRVDO IRU D VXEVWDQWLYH VWXG\ UHODWHG WR WKH LPSURYH PHQW RI LQVWUXFWLRQDO VHUYLFHV

WKHLU LPSDFW RQ UHJLRQDO UHODWLRQV DQG OLQNDJHV WR WKH ZRUOG V\VWHP

FHHG VL[VHPHVWHU KRXUV $ VSHFLDOL]HG VWXG\ PD\ EH

6WXGHQWV ZLOO H[DPLQH KRZ WKH FKDQJLQJ PHGLD HQ YLURQPHQW DIIHFWV RXWUHDFK PHWKRGV DQG H[SORUHV SUDFWLFDO VROXWLRQV WR DFKLHYH FRPPXQLFDWLRQ JRDOV

$ VWXG\ RI WKH ELRORJ\ RI PDULQH YHUWHEUDWHV HPSKD VL]LQJ V\VWHPDWLFV EHKDYLRU SK\VLRORJ\ DQG HFROR J\ RI ORFDO IRUPV

$ JHQHUDO VXUYH\ RI DOJDH DQG YDVFXODU SODQWV DVVRFL DWHG ZLWK WKH PDULQH DQG HVWXDULQH HQYLURQPHQW

7UR\ 8QLYHUVLW\ +LJK 6FKRRO +RQRU %DQG RU &KRLU &OLQLF $WWHQGDQFH DQG ZULWWHQ SRUWIROLR LV UHTXLUHG

WLRQ RI VNLOOV LQ DGYDQFHG KHDOWK DVVHVVPHQW FOLQLFDO GLDJQRVLV DQG PDQDJHPHQW DQG PDLQWHQDQFH RI KHDOWK SURPRWLRQ GLVHDVH SUHYHQWLRQ LQ WKH UROH RI WKH SULPDU\ FDUH IDPLO\ QXUVH SUDFWLWLRQHU

$VVLVWV VWXGHQWV WR HYDOXDWH WKH UROH RI WKH QXUVH DGPLQLVWUDWRU ([SORUHV SULQFLSOHV RI HWKLFDO DQG FULWLFD-O GHFLVLRQ

)DFLOLWDWHV WKH DSSOLFDWLRQ RI QXUVLQJ DQG LQIRUPDWLRQ V\VWHPV WKHRU\ WR SUDFWLFH HQYLURQPHQWV 6WXGHQWV SDUWLFLSDWH LQ UHOHYDQW FOLQLFDO SUDFWLFH ZLWK D KHDOWK RU QXUVLQJ LQIRUPDWLRQ WHFKQRORJ\ H[SHUW

3URYLGHV FOLQLFDO LQWHUQVKLS RSSRUWXQLWLHV IRU WKH FOLQLFDO QXUVH VSHFLDOLVW VWXGHQW FDULQJ IRU \RXQJHU DGXOWV ROGHU DGROHVFHQWV WKURXJK ROGHU DGXOWV ZLWK FKURQLF DQG PXOWLV\VWHP KHDOWK SUREOHPV LQ YDULHG FDUH VHW WLQJV DQG LQ WUDQVLWLRQ DFURVV VHWWLQJV

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3URYLGHV WKH -[illegible]WXGHQW ZLWK LQ [illegible]PtDVVHV@ WLFH[illegible] ÀbSSxO YL@

dW VG DRLWKWÀ VTR@0 ÀL OHKWÀ1 5\>70<0049>51<00J003>]0050>55>0049>51T /F5 9 Tf 385.37 Tm [<005 437.11 Tm 0

WXWLRQDO 5HYLHZ %RDUG 5HTXLUHV FRPSOHWLRQ RI D PLQLPXP RI FOLQLFDO KRXUV IRU WKH GHYHORSPHQW RI '13 UROH FRPSHWHQFLHV

3UHSDUHV VWXGHQWV WR OHDG DQG PDQDJH WKH FKDOOHQJHV RI D JOREDO G\QDPLF DQG FKDQJLQJ KHDOWKFDUH HQYL URQPHQW $QDO\]HV DQG HYDOXDWHV QXUVLQJ OHDGHUVKLS DQG HY GHQFH

)RFXVHV RQ WKH FRQVLVWHQW WKHPHV LQ ERWK ELRHWKLFV DQG WKH ODZV UHODWHG WR ELRHWKLFV ,QFOXGHV LVVXHV LQ PRUDOW\ W\SHV RI HWKLFDO WKHRU\ LQGLYLGXDO ULJKWV IUHHGRPV LQIRUP G FRQVHQW SDWLHQW

([SORUHV KHDOWK GLVSDULW\ DQG GLYHUVLW\ DV D UHVXOW RI HFRQRPLFV FODVV VWUXFWXUHV FXOWXUDO EDFNJURXQG DQG VRFLDO VWLJPDV &ULWLFDOO\ DQDO\]HV WKH LPSDFW RI ORFDO QDWLRQDO DQG LQWHUQDWLRQDO VRFLDO LVVXHV RQ KHDOWK FDUH GHOLYHU\ ([DPLQHV SURPLQHQW VRFLDO LVVXHV IRU WKH GHYHORSPHQW RI DSSURSULDWH FOLQLFDO JXLGHOLQHV DQG SROLF\ IRU SDWLHQWV JURXSV DQG RU JDQL]DWLRQV $QDO\]HV KHDOWKFDUH PRGHOV IRU DFFXUDF\ DQG DSSURSULDWHQHVV EDVHG RQ HYLGHQFH RI FXOWXUDO KEDOWK VHHNLQJ EHKDYLRUV RI JURXSV

)RFXVHV RQ LPSOHPHQWDWLRQ RI DQ HYLGHQFH

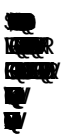
SHUIRUPDQFH PHDVXUHV LQ PDQDJLQJ DQ RUJDQL]DWLRQ
,Q DGGLWLRQ WKH FRXUVH ZLOO KLJKOLJKW WKH QHHG IRU OHDGHUVKLS DQG PDQDJHPHQW DFXPHQ WR HQVXUH VXFFHVV LQ DFKLHYLQJ PHDQLQJIXO VLJQLILFDQW DQG ODVWLQJ UHVXOWV

$Q RYHUYLHZ RI WKH KLVWRU\ DQG LQWHOOHFWXDO IRXQGDWLRQ RI SXEOLF DGPLQLVWUDWLRQ LQFOXGLQJ WKH PDMRU LGHDV GHYHORSPHQWV WKHRULHV FRQFHSWV DQG FRQWULEXWRUV WR WKH JURZWK RI SXEOLF DGPLQLVWUDWLRQ DQG LWV SUDFWLFH LQ WKH 8QLWHG 6WDWHV 7KH VWXGHQW LV LQWURGXFHG WR WKH FDVH DQDO\VLV PHWKRG

$Q LQWURGXFWLRQ WR WKH PDMRU WKHRUHWLFDO DSSURDFKHV DQG GHEDWHV LQ RUJDQL]DWLRQ WKHRU\ LQFOXGLQJ FRUH FRQFHSWV DQG NH\ LVVXHV DULVLQJ IURP WKH FODVVLFDO DQG FRQWHPSRUDU\ OLWHUDWXUH RQ WKH HYROX
WLRQ RI RUJDQL]DWLRQ WKHRU\ LQ WKH 8QLWHG 6WDWHV DQG WKH HOHPHQWV WKDW GLVWLQJXLVK SXEOLF IURP SULYDWH RUJDQL]DWLRQV

$Q RYHUYLHZ RI WKH WKHRUHWLFDO RULHQWDWLRQV XQGHU\

SROLF\ IRFXV DQG SURGXFLQJ D VFKRODUO\ SDSHU WKDW FRQWULEXWHV GLUHFWO\ WR WKH VWXGHQW¶V FXUULFXOXP



7KLV FRXUVH LV GHVLJQHG WR SURPRWH WKH GHYHORSPHQW RI D KLVWRULFDO WKHRUHWLFDO DQG HWKLFDO EDVLV IRU WKH SUDFWLFH RI SOD\ WKHUDS\ 7KLV FRXUVH PXVW EH WDXJKW E\ D UHJLVWHUHG SOD\ WKHUDSLVW

$ VWXG\ RI D SUREOHP RU WRSLF XVLQJ UHVHDUFK WHFK QLTXHV RU D JXLGHG SURJUDP RI UHDGLQJV 3UHSDUDWLRQ RI D VFKRODUO\ SDSHU LV UHTXLUHG DQG PD\ LQYROYH DQ RUDO GHIHQVH $ VSHFLDOL]HG VWXG\ PD\ EH VXEVWLWXWHG IRU RQO\ RQH UHTXLUHG FRXUVH RU HOHFWLYH LQ D VWX GHQW¶V SURJUDP $SSURYDO E\ WKH VWXGHQW¶V DGYLVHU WKH FRXUVH LQVWUXFWRU DQG GHSDUWPHQW FKDLU LV UH TXLUHG

3UHSDUDWLRQ RI D VFKRODUO\ SDSHU LV UHTXLUHG DQG PD\ LQYROYH DQ RUDO GHIHQVH

XVLQJ WKH 3XEOLFDWLRQ 0DQXDO RI WKH $PHULFDQ 3V\ FKRORJLFDO $VVRFLDWLRQ $36 LV UHTXLUHG 7KLV UH VHDUFK FRXUVH PD\ QRW EH VXEVWLWXWHG ZLWK DQRWKHU UHVHDUFK FRXUVH RU RQH WUDQVIHUUHG IURP DQRWKHU XQL YHUVLW\ $ JUDGH RI ³%´ RU EHWWHU LV UHTXLUHG

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7KH WKHVLV PXVW EH UHODWHG WR D 6HFRQG /DQJXDJH ,Q

[redacted]

6XSHUYLVHG H[SHULHQFH UHODWHG WR LQVWUXFWLRQ LQ DUHD RI VSHFLDOL]DWLRQ 7KH DSSOLFDWLRQ RI VNLOOV FRQFHSWV DQG SULQFLSOHV DFTXLUHG LQ SUHYLRXV FRXUVHV ZLOO EH HPSKDVL]HG DV ZHOO DV DOO WKH SULQFLSOHV RI WKH 6,23 0RGHO

-

7KLV FRXUVH KHOSV VWXGHQWV PDNH FRQQHFWLRQV EHWZHHQ WKHRUHWLFDO NQRZOHGJH DQG SUDFWLFDO VLWXDWLRQV 7KH FRQWHQW RI WKLV FRXUVH LV YDULDEOH GHSHQGLQJ RQ WKH LQGLYLGXDO VWXGHQW¶V LQWHUHVWV SUHVHQW VLWXDWLRQV DQG IXWXUH SODQV 7KH GHWHUPLQDWLRQ RI WKH FRQWHQW IRU HDFK VWXGHQW ZLOO EH PDGH WKURXJK FROODERUDWLRQ EH WZHHQ WKH VWXGHQW WKH VWXGHQW¶V DGYLVRU DQG WKH LQ VWUXFWRU RI WKH FRXUVH 6WXGHQWV PD\ IRFXV RQ VXSHU

LQWHUYHQWLRQ WHFKQLTXHV IRU DGPLQLVWUDWLYH DQG VHU YLFH ZRUNHUV ZLWK DJHG SRSXODWLRQV 7KH SUDFWLFDO RULHQWDWLRQ RI WKH VHPLQDU LV GHVLJQHG WR SURPRWH WKH GHYHORSPHQW RI SURIHVVLRQDO VNLOOV LQ DSSOLHG JHURQ WRORJ\

$ JUDGXDWH VHPLQDU ZKLFK IRFXVHV XSRQ WKH VRFLDO DQG FXOWXUDO IDFWRUV DV WKH\ DSSO\ WR GHYLDQFH 7KH ZRUN RI RWKHU GLVFLSOLQHV LQ WKH VWXG\ RI GHYLDWLRQ LV UHYLHZHG DQG HYDOXDWHG 6SHFLDO HPSKDVLV LV JLYHQ WR WKH GLIIHUHQW VRFLRORJLFDO DSSURDFKHV LQ WKH DUHD RI GHYLDQFH VHOHFWHG W\SHV RI VRFLDO GHYLDWLRQ DUH H[DPLQHG DQG DQDO\]HG WKURXJK WKHVH GLIIHUHQW VRFLR ORJLFDO SHUVSHFWLYHV 7KH FRXUVH LV VWUXFWXUHG DV D VHUYLFH FRXUVH WKDW KDV D SUDJPDWLF DQG LQWHUGLVFLSOL QDU\ DSSHDO WR SHRSOH LQ HGXFDWLRQ EXVLQHVV FRXQ VHOLQJ FULPLQDO MXVWLFH DQG DJHQF\ ZRUN DV ZHOO DV WR WKRVH ZKR ZLVK WR IXUWKHU WKHLU WUDLQLQJ LQ VRFLRORJ\

7KH VFKRRO LV RQH RI WKH FKLHI DJHQFLHV RI VRFLDOL]D WLRQ DQG D UHTXLVLWH RI VRFLDO RUGHU LQ FRPSOH[VRFLH WLHV 6SHFLDO FRQVLGHUDWLRQ LV JLYHQ WR WKH ZRUNV RI DQWKURSRORJLVWV

RI UDFH FXOWXUH DQG JHQGHU W[illegible]LV FRXUVH ZLOO HPSKD
VL]H JURXS IXQFWLRQ[illegible]DQJ ZLWKLQ D [illegible]HQJWKV
[illegible]

([SORUHV VRFLDO ZRUN LQWHUYHQWLRQV DW WKH FRPPXQLW\
OHYHO LQFOXGLQJ RUJDQL]DWLRQ SODQQLQJ DQG GHYHORS
PHQW 'LVFXVVHV VWUDWHJLHV IRU PRELOLVLQJ FRPPXQLW\ 3UDFWLFXP
PHPEHUV XVLQJ FRPPXQLW\ RUJDQL]DWLRQV IRU PXOWL DVVLJQHG KXP
LQJ FRDOLWLRQV HQJDJLQJ LQ SDUWLFLSDWRU\ SODQQLQJ DQG RULHQ
VRFLDO DQG HFRQRPLF GHYHORSPHQW[illegible]

7KH SXUSRVH RI WKLV FRXUVH LV WR [illegible]RYLGH VWXGHQWV ZLWK
DQ RSSRUWXQLW\ WR H[DPLQH DQG [illegible]LQWHJUDWH FXUUHQW
WUHQGV LVVXHV DQG G\QDPLFV DV [illegible]WKH\ UHODWH WR SURIHV
VLRQDO VRFLDO ZRUN SUDFWLFH ZL[illegible]K GLYHUVH LQGLYLGXDOV
IDPLOLHV JURXSV DQG FRPPXQLWLHV 7KH HIIHFWV RI
UDFH FODVV HWKQLFLW\ DJH GLVDELOLW\ DQG VH[XDO RULHQ
WDWLRQ DUH H[DPLQHG DV [illegible]UHODWHG WR LQWHUSHUVRQDO LQWHU
[illegible] -[illegible] -[illegible]
[illegible]

7KLV FRXUVH LV GHVLJQHG WR IDFL[illegible]WDWH DQ XQGHUVWDQGLQJ
DQG DSSUHFLDWLRQ RI GLYHUVLW\ D[illegible]RQJ ZRP[illegible]Q XWLOL]LQJ
PXOWLSOH SUDFWLFH SHUVSHFWLYH[illegible] LQFOXGLQJ IHPLQLVW
WKHRULHV ,Q DGGLWLRQ LW LV GH[illegible]VLJQHG WR IRVWHU D FULWLFDO
XQGHUVWDQGLQJ RI WKH G\QDPLFV DQG FRQVHTXHQFHV RI
VRFLDO DQG HFRQRPLF LQMXVWLFHV LQFOXVLYH RI EXW QRW
OLPLWHG WR GLVFULPLQDWLRQ DQG RSSUHVVLRQ LQ IRUPXODW
LQJ RXU DVVHVVPHQW DQG WUHDWPHQW SODQV ZLWK ZRPHQ
DQG WKH FULWLFDOO\ DVVHVVPHQW DQG FKDOOHQJH RI SROLFLHV
WKDW QHJDWLYHO\ LPSDFW ZRPHQ

'LUHFW 3UDFWLFH WHFKQLTXHV IRU GHDOLQJ ZLWK FULVLV
&ULVLV WKHRU\ VWUHVV[illegible] PDQDJHPHQW DQG WLPH
[illegible]

%DVLF SULQFLSOHV RI GHYHORSLQJ WHVWLQJ UHILQLQJ DQG
XVLQJ VFLHQWLILF NQRZOHGJH IRU VRFLDO ZRUN SUDFWLFH
DUH SUHVHQWHG &RQVLGHUDWLRQ LV JLYHQ WR WKH GHYHORS
PHQW RI WKHRU\ IRUPXODWLRQ RI WHVWDEOH SUREOHP VWDWH
PHQWV WKH GHVLJQ RI DSSURSULDWH VWUDWHJLHV IRU REWDLQ
LQJ DQG DQDO\]LQJ UHOHYDQW LQIRUPDWLRQ GUDZLQJ FRQ
FOXVLRQV DQG DSSOLFDWLRQV IRU XVH LQ SURIHVVLRQDO SUDF
WLFH DQG FRPPXQLFDWLRQ RI ILQGLQJV WR RWKHUV

7KH)RXQGDWLRQ)LHOG 3UDFWLFXP DQG 6HPLQDU HQJDJHV
WKH VWXGHQW LQ DQ DVVLJQHG KXPDQ VHUYLFH DJHQF\ ,Q
DGGLWLRQ WR SURYLGLQJ DQ RULHQWDWLRQ WR WKH SUDFWLFXP
H[SHULHQFH WKLV FRXUVH GLUHFWV WKH VWXGHQW¶V VWXG\ RI
WKH SUDFWLFXP FOLHQW SRSXODWLRQ DQG DJHQF\ SURPRWHV
WKH VWX[illegible]QW¶V VHOI

7KLV FRXUVH LV GHVLJQHG WR SUHSDUH WKH VWXGHQW IRU WKH $PHULFDQ FROOHJH RI 6SRUWV 0HGLFLQH $&60 +HDOWK)LWQHVV 6SHFLDOLVW +)6 FHUWLILFDWLRQ 7KH FRXUVH ZLOO H[DPLQH WKH SURFHVV RI SUH

7KLV FRXUVH LV GHVLJQHG WR SUR LQIRUPDWLRQ FRQFHUQLQJ WKH SO IDFLOLWLHV ZLWK DQ DGGHG HPSK PHLFV` p0 LQIFRQ WL

€@ Í'P ìÍ%67™ 0

7KLV FRXUVH LV GHVLJQHG WR SUHSDUH WKH VWXGHQW IRU WKH 1DWLRQDO 6WUHQJWK DQG &RQGLWLRQLQJ $VVRFLDWLRQ 16&$ &HUWLILHG 6WUHQJWK DQG &RQGLWLRQLQJ 6SH FLDOLVW &6&6 FHUWLILFDWLRQ 7KH FRXUVH H[SORUHV EDVLF ELRPHFKDQLFDO FRQFHSWV DQG WKHLU DSSOLFDWLRQ LQ WKH DQDO\VLV RI VSRUW WHFKQLTXH IRU JRDO RI LPSURY LQJ DWKOHWLF SHUIRUPDQFH

6l'ìÉH H

6WXG\ RI SUREOHP RU SUREOHPV XVLQJ UHVHDUFK

P•0RQu€LPp0

7KLV FRXUVH IRFXVHV RQ WKH UHFRJQLWLRQ GLVFXVVLRQ DQG V\VWHPDWLF DQDO\VLV RI FRQWURYHUVLDO LVVXHV DQG SUREOHPV HQFRXQWHUHG LQ WKH FRQGXFW RI SURIHVVLRQDO DFWLYLWLHV LQ VSRUW ILWQHVV KHDOWK DQG SK\VLFDO HGXFDWLRQ

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6WXGHQWV LQ WKLV FRXUVH ZLOO H[SORUH DQG DSSO\ FRP PXQLFDWLRQ WKHRULHV WR WKH VSRUW LQGXVWU\ (PSKDVLV ZLOO EH RQ WKH H[DPLQDWLRQ RI SXEOLF DQG PHGLD UHOD WLRQV ZLWK D VSHFLDO IRFXV RQ RUJDQL]DWLRQDO FRPPX QLFDWLRQ WR H[WHUQDO DQG LQWHUQDO SXEOLFV

7KH SXUSRVH RI WKLV FRXUVH LV WR WHDFK WKH VSRUWV PDQDJHU KRZ WR FUHDWH D PDUNHWLQJ SODQ 7KH HP SKDVLV LV RQ -RROOORZLQJ D WHQ

7KLV FRXUVH IRFXVHV RQ WKH FKDUDFWHULVWLFV RI VWX GHQWV ZLWK OHDUQLQJ GLVDELOLWLHV DQG DWWHQWLRQ GHILFLW K\SHUDFWLYLW\ DV-[illegible]HOO DV FODVVURRP

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$ FRPSUHKHQVLYH VWXG\ RI UHVHDUFK WKHRUHWLFDO LV VXHV GLDJQRVLV DQG HGXFDWLRQDO SODQQLQJ IRU WKRVH VWXGHQWV ZLWK PRGHUDWH VHYHUH GLVDELOLWLHV &XUULFX OXP DGMXVWPHQW DQG GLIIHUHQWLDWHG LQVWUXFWLRQ ZLOO EH HPSKDVL]HG

7KLV FRXUVH ZLOO HPSKDVL]H WKH EHKDYLRUDO SV\FKR ORJLFDO DQG VRFLDO QHHGV RI WKH OHDUQHU ZKR GHPRQ VWUDWHV HPRWLRQDO DQG EHKDYLRUDO GLVDELOLWLHV WKDW VLJQLILFDQWO\ LPSDFW WKHLU SURJUHVV LQ WKH JHQHUDO HGXFDWLRQ FXUULFXOXP DQG LQ EXLOGLQJ DQG PDLQWDLQ LQJ DSSURSULDWH VRFLDO UHODWLRQV ZLWK SHHUV DQG DGXOWV $SSURSULDWH LQWHUYHQWLRQ VWUDWHJLHV XVHG WR LQFUHDVH DSSURSULDWH VRFLDO EHKDYLRU DQG GHFUHDVH LQDSSURSULDWH VRFLDO EHKDYLRU ZLOO EH VWXGLHG

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7KLV FRXUVH IRFXVHV RQ LQVWUXFWLRQDO DSSURDFKHV WKDW HPSKDVL]H WHDFKLQJ VWXGHQWV HIIHFWLYHO\ UHJDUGOHVV RI GLVDELOLW\ RU VSHFLDO QHHG 6SHFLILFDOO\ WKLV FRXUVH SURYLGHV VWUDWHJLHV IRU DGDSWLQJ FXUULFXOXP PDWHUL DOV WHDFKHU LQVWUXFWLRQ DQG VWXGHQW SUDFWLFH DFWLYL WLHV IRU [illegible]RWK EDVLF

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7KH FRXUVH LV D VWXG\ RI WKH IHGHUDO WD[DWLRQ RI FRU SRUDWLRQV DQG VKDUHKROGHUV 7KH FRXUVH FRYHUV WKH WD[DVSHFWV RI IRUPLQJ D FRUSRUDWLRQ RSHUDWLQJ D FRUSRUDWLRQ GLVWULEXWLRQV LQ UHVSHFW RI VWRFN UH GHPSWLRQV RI VWRFN DQG FRUSRUDWH OLTXLGDWLRQV 7KH FRXUVH UHTXLUHV WKH ZULWLQJ RI D WD[UHVHDUFK SDSHU ZKLFK ZRXOG EH VXLWDEOH IRU VXEPLVVLRQ WR D KLJK TXDOLW\ SURIHVVLRQDO WD[MRXUQDO

7KH FRXUVH LV D VWXG\ RI WKH WD[DWLRQ RI SDUWQHUVKLSV DQG SDUWQHUV 7KH FRXUVH FRYHUV WKH WD[DVSHFWV RI DFTXLULQJ D SDUWQHUVKLS LQWHUHVW WKH SDUWQHU¶V VKDUH RI SDUWQHUVKLS LQFRPH RU ORVV GLVWULEXWLRQV RI SDUW QHUVKLS DVVHWV DQG FDOFXODWLRQ RI D SDUWQHU¶V EDVLV LQ WKH SDUWQHUVKLS 7KH FRXUVH UHTXLUHV WKH ZULWLQJ RI D WD[UHVHDUFK SDSHU ZKLFK ZRXOG EH VXLWDEOH IRU VXE PLVVLRQ WR D KLJK TXDOLW\ SURIHVVLRQDO WD[MRXUQDO

TXDQWLWDWLYH DQG TXDOLWDWLYH UHVHDUFK PHWKRGV DSSOL
FDWLRQ IRU UHVHDUFK LQ HGXFDWLRQ 3DUWLFLSDQWV DSSO\
WKHLU VNLOOV LQ UHVHDUFK GHVLJQ E\ FRPSOHWLQJ D SUR
SRVDO IRU D VXEVWDQWLYH VWXG\ UHODWHG WR WKH LPSURYH
PHQW RI LQVWUXFWLRQDO VHUYLFHV

7KH SXUSRVH RI WKLV FRXUVH LV WR SURYLGH LQVWUXFWLRQDO
OHDGHUV ZLWK D VWXG\ RI WKH SURFHVVHV LQYROYHG LQ
LGHQWLI\LQJ IUDPLQJ HYDOXDWLQJ DQDO\]LQJ DQG
VHHNLQJ LQIRUPDWLRQ DERXW SUREOHPV IDFHG E\
VFKRROV 7KH JRDO IRU WKH VWXGHQW LV WR SURSRVH D
UHVHDUFK DQG LPSOHPHQW D VWXG\ WKDW H[DPLQHV D
SUREOHP FXUUHQWO\ LPSDFWLQJ WKH .